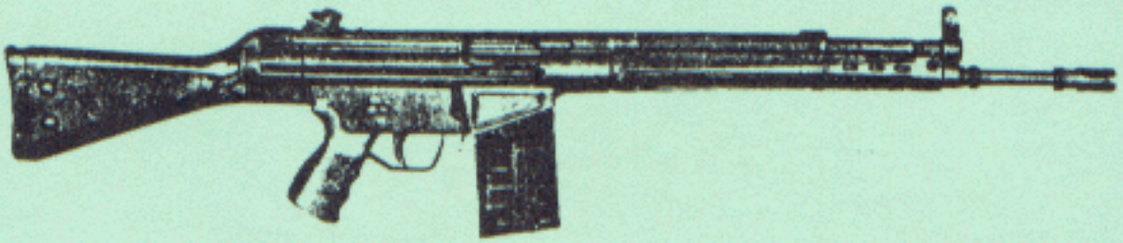
AUTOMATIC RIFLE

HK G3

Caliber 7.62 mm x 51 Nato



HK

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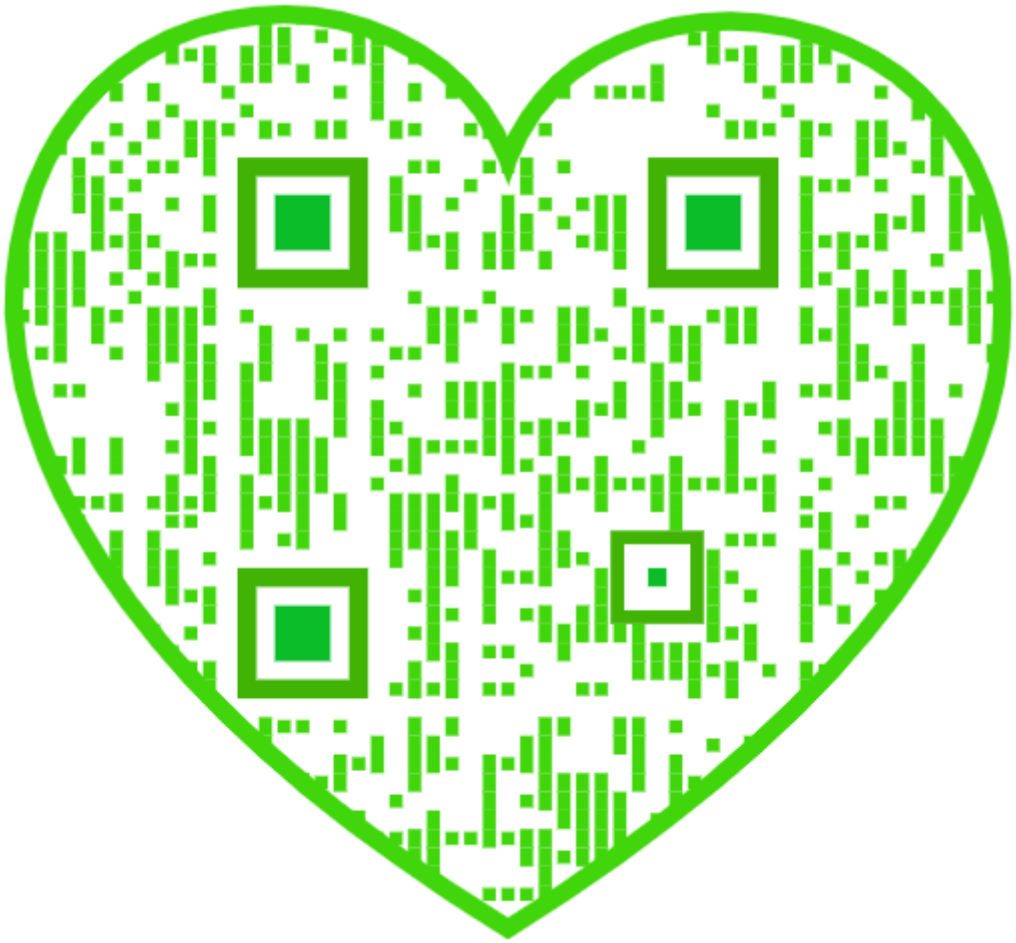

TECHNICAL DESCRIPTION

OF THE

AUTOMATIC RIFLE HK G3

Part 1: Description of the Weapon and Accessories

Part 2: Operating Instructions and Maintenance

This is not an official manual. Under no circumstances shall the reader contact the manufacturer regarding any data presented in this pamphlet.

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1.1. GENERAL INFORMATION

1.1.1. Designation

Rifle 7.62 mm x 51

Fig. 1: Rifle G3A3

1.1.2. Applicability

The Rifle G3 is an automatic small arm which permits to fire single shots or short bursts from all firing positions.

1.1.3 General description

The salient features of the G3 are simple handling, instant combat readiness, excellent accuracy and high firepower. It is light of weight, most reliable in its functions and its parts are fully interchangeable.

The G3 is a recoil-operated weapon with fixed barrel incorporating a split blow-back locking system.

Cartridges are fed from a 20-round magazine or, in case, inserted manually.

Rifle grenades can be launched from this weapon. This, however, requires a propellant charge.

A blank attachment makes the firing of blank cartridges possible.

The subcalibre conversion kit is a training equipment to the Rifle G3 for the firing of 5.6 mm x 16 subcalibre ammunition.

In case of practice firing the G3 standard bolt assembly can be replaced by a bolt for the firing of plastic training ammunition.

The excellent firing accuracy permits the use as sniper rifle. With the provided telescopic sight the G3 can be used as a sniper rifle.

With the Rifle G3 cartridges 7.62 mm x 51 of all NATO countries can be fired.

1.2. GENERAL ILLUSTRATIONS

Fig. 2: G3A3 from the left

Fig. 3: G3A3 from the right

Weapon G3A3 with plastic butt stock and plastic handguard. Handguard fixed at the loading lever housing (free floating barrel).

Fig. 4: G3A3 ZF from the left

Fig. 5: G3A3 ZF from the right

Weapon G3A3 ZF, same version as G3A3, but with telescopic sight.

Fig. 6: G3A4 from the left

Fig. 7: G3A4 from the right

Weapon G3A4 with retractable butt stock, plastic handguard fixed at the loading lever housing (free floating barrel).

1.4. TECHNICAL DATA

Calibre		7.62 mm x 51 NATO
Length of the weapon with rigid butt stock	40.15 in.	(1020.00 mm)
Length of the weapon with retractable butt stock	31.49 in.	(800.00 mm)
Breadth of the weapon	1.77 in.	(45.00 mm)
Height of the weapon with magazine	8.66 in.	(220.00 mm)
Length of the barrel	17.71 in.	(450.00 mm)
Distance between sights	22.48 in.	(572.00 mm)
Length of twist, permanently to the righthand	12.00 in.	(305.00 mm)
Number of the grooves	4	
Number of the chamber grooves	12	
Weight of the weapon with rigid butt stock, without magazine	9.37 lbs.	(4.25 kg)
Weight of the weapon with retractable butt stock, without magazine	9.96 lbs.	(4.52 kg)
Weight of the aluminium magazine, filled	21.95 oz.	(0.622 kg)
Weight of the steel magazine, filled	26.54 oz.	(0.752 kg)
Cyclic rate	500 - 600 r.p.m.	
Muzzle velocity - V_o -	2559-2624 f.p.s.	(780 - 800 m/s)
Muzzle energy - E_o -	2098-2170 ft. lb.	(290 - 300 mkg)
Sighting graduation	100, 200, 300 and 400 metres	
Longest range	4046 yd.	(3700 m)
Normal range of use	up to 437 yd.	(400 m)
Safety limit in the firing direction	4370 yd.	(4000 m)
Safety limit on each side	1093 yd.	(1000 m)
Protruding point of the firing pin		1.45 mm
Distance between bolt head and bolt head carrier		0.5 - 0.1 mm

1.5. TECHNICAL DESCRIPTION

1.5.1. Construction

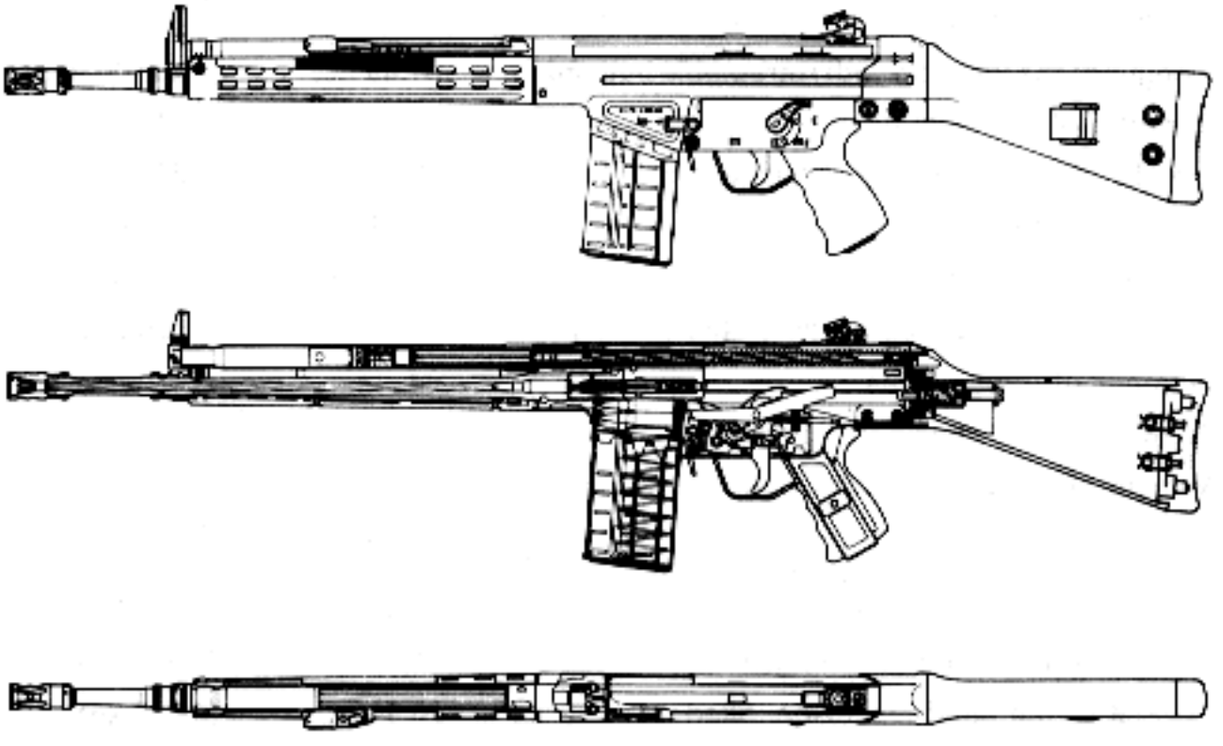

Fig. 9: Cross section

1.5.1.1. **Barrel with receiver, loading mechanism and sights**
(Fig. 10 and 11)

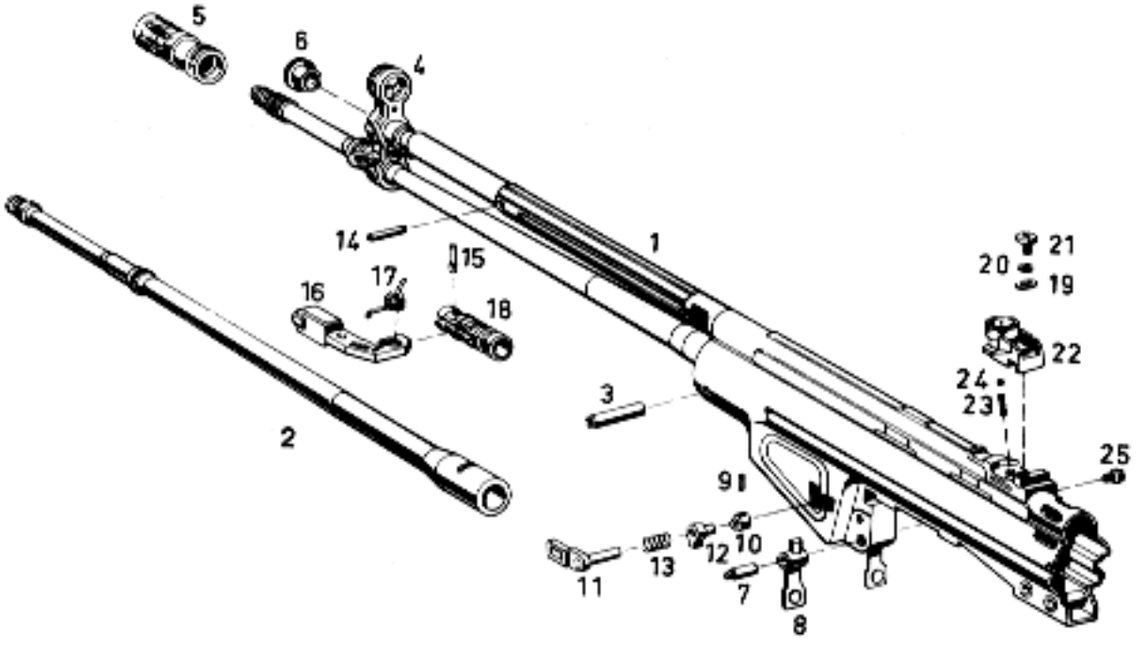

Fig. 10: Components, barrel, receiver, loading mechanism and sights

1 Receiver with barrel, loading housing, front sight holder, and release lever
2 Barrel
3 Cylindrical pin
4 Front sight holder
5 Flash hider
6 Cap
7 Bush for release lever
8 Release lever
9 Clamping sleeve
10 Contact button for magazine catch
11 Magazine catch
12 Contact piece for magazine catch
13 Contact spring for magazine catch
14 Pin for stop abutment
15 Axis for loading handle
16 Loading handle
17 Elbow spring for loading handle
18 Contact piece for loading handle
19 Fix plate for sight support
20 Locking washer
21 Binding screw
22 Rotary rear sight
23 Compression spring for ball catch
24 Ball
25 Adjusting screw

The receiver (11/1) contains the barrel (11/2), loading mechanism (11/4) and sights (11/6).

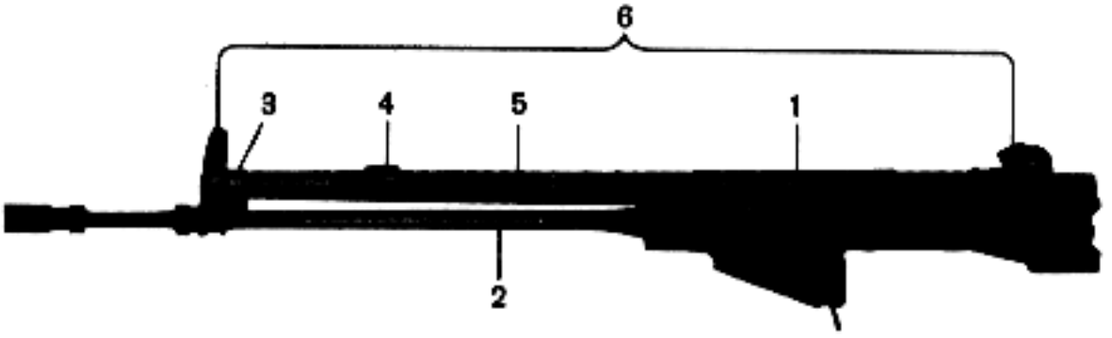

Fig. 11: Barrel with receiver, loading mechanism and sights

On the right and left side of the receiver grooves are impressed to guide the bolt and to seat the back plate. In front there are two openings to receive barrel extension and barrel, as well as the loading lever housing (11/5).

The back plate closes the receiver at the rear. The lower rear part of the receiver is box-type shaped and provided with 2 tubular rivets to store the locking pins linking the grip assembly and the back plate to the receiver.

At the front part of the receiver are the magazine shaft and the magazine catch, two holes with bushes for the locking pins of the grip assembly.

On the right side of the receiver is the ejection part. The sight base is welded on the receiver.

The telescopic sight mount is located on the front part of the sight base. On the left and right side of the receiver are 4 recesses for the engaging of telescopic sight mount and clamping claws.

The magazine shaft serves in connection with the magazine catch (10/11) to locate and fix the magazine.

The loading lever housing is inserted in the receiver and spot-welded. A U-shaped bow (11/3) is welded on to the front end of the loading lever housing for the locating of the handguard locking pin.

The loading lever housing has on its left side a longitudinally slotted hole which has at its end an extension to the right side in which the loading lever engages (10/16). In this slotted hole slides the loading lever with its spring (10/17) and support (10/18). With the loading lever and support the bolt is drawn back compressing the recoil spring simultaneously. In front the support and the loading lever are limited by the stop abutment. The stop abutment is attached to the loading lever housing by means of a rivet (10/14). At the left side this riveted pin emerges as a stud. The loading lever engages on it when the bolt snaps forward. The loading lever housing is closed in front by a cap (10/6); a set bolt with spring holds the inserted cap in the front sight (10/4).

Barrel (Fig. 12)

In the barrel the cartridge is fused and given motion, direction and twist (right-handed twist). The interior of the barrel consists of the chamber (1) and the rifled part (2). In the latter are 4 grooves,

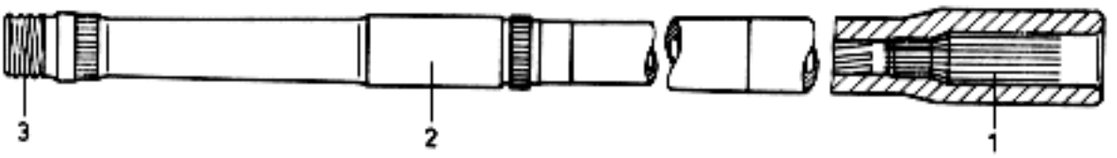

Fig. 12: Barrel

which have a constant twist to the right. The chamber has 12 flutes which facilitate the extraction of the cartridge case utilizing the gas pressure. The muzzle is provided with a thread where the flash hider (3) or rather the blank attachment can be screwed on. Behind the thread a centering shoulder is located for better guidance while screwing on.

The longitudinal grooves behind the centering shoulder serve as catches for the retaining spring of the flash hider or rather of that of the blank attachment.

Flash hider (Fig. 13)

The two functions of the flash hider (1) are to hide the muzzle flash and to guide the rifle grenade. The longitudinal slots in its front part split the muzzle gasses. At the rear a retaining spring (2)

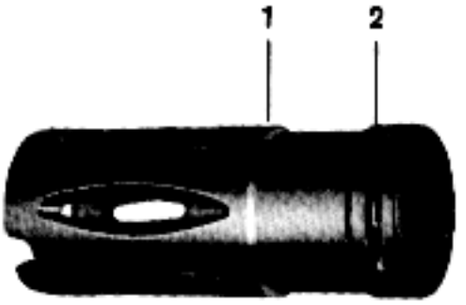

Fig. 13: Flash hider

is set which engages in the notches and prevents the flash hider or rather the blank attachment from loosening. The flash hider is screwed on until it is in tight contact with the muzzle of the barrel.

Rotary rear sight device (Fig. 14, 15 and 16)

The sighting device consists of the fixed front sight with front sight holder (14/1) and the rotary rear sight which is adjustable in the vertical and horizontal direction (14/2).

The rotary rear sight (notch) and diopter holes may be turned from position 1 to 4. These figures correspond to distances from 100 to 400 metres. Position "1" is an open V-sight, in the positions "2, 3 and 4" diopter holes are used. Position "2" serves as basic sight. The open V-sight, corresponding to a distance of 100 m, is an auxiliary sight.

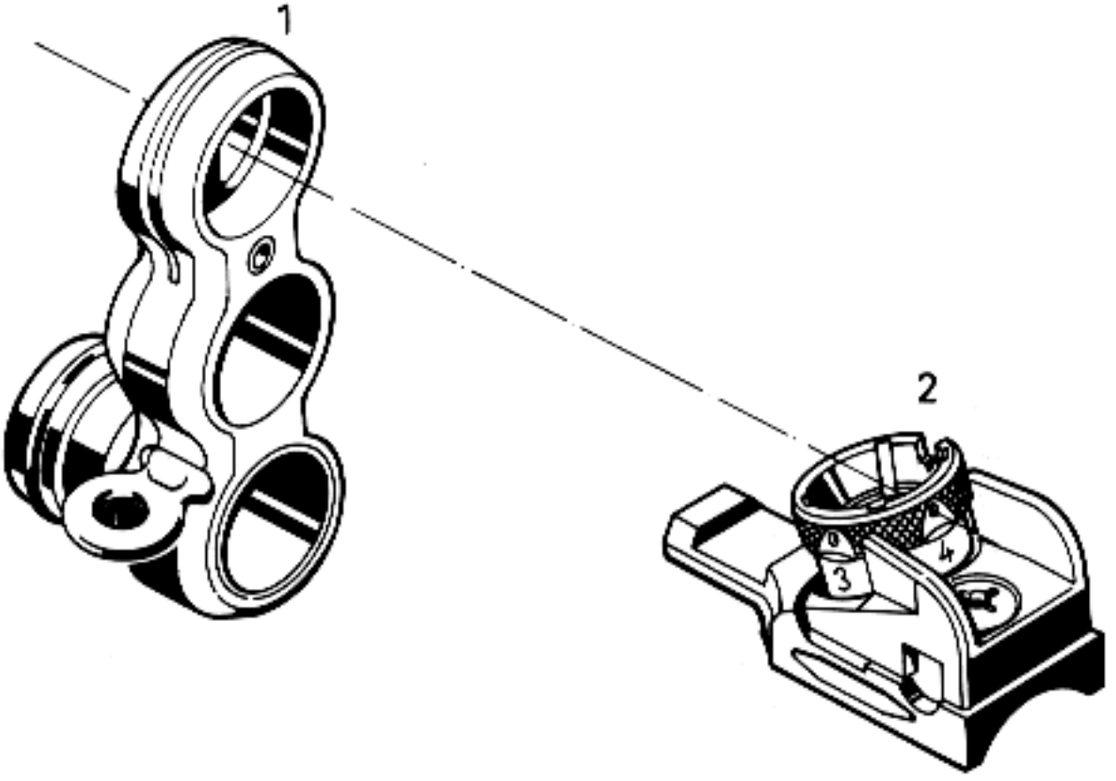

Fig. 14: Rotary rear sight device

The front sight holder (15/1) with bush for front sight holder (15/2) is set on the barrel and soldered softly to the latter. In addition to that the front sight holder is riveted on the barrel by means of an eyebolt (15/3) which also serves to attach the carrying sling. In the front part of the front sight holder is the snap ring (15/4) which prevents the rifle grenade from slipping off. The uppermost part of the front sight is developed as a protection of the sight. The front sight (15/5) is pushed into a longitudinal slit and fixed by a clamping sleeve (15/6).

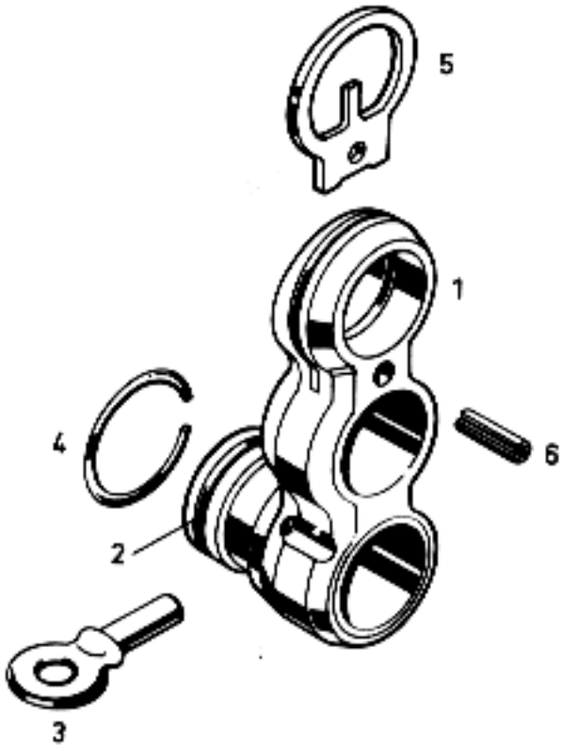

Fig. 15: Front sight holder

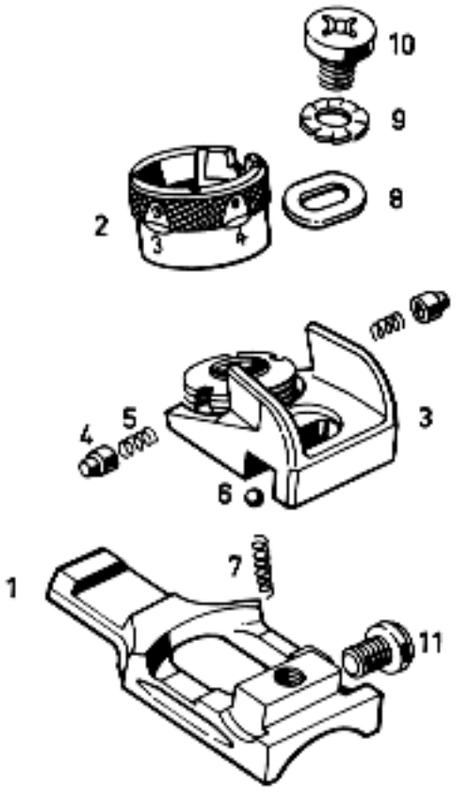

Fig. 16: Rotary rear sight

The sight base (16/1) is welded on the receiver and the sight cylinder (16/2) with its thread screwed on the sight support (16/3). The two catch bolts (16/4) and catch bolt springs (16/5) are located between the rotary screw socket in the sight support and the sight cylinder. The ball (16/6) and compression spring (16/7) press against the screw socket and lock the sight cylinder in the adjusted shooting distance.

With fix plate (16/8), locking washer (16/9) and binding screw (16/10) the sight support is screwed on the sight base. The rotary rear sight is adjusted by means of the adjusting screw (16/11).

1.5.1.2. **Bolt assembly** (Fig. 17)

1 Bolt head carrier with check lever
2 Cylindrical pin
3 Check lever
4 Compression spring
5 Bolt head
6 Extractor spring
7 Extractor
8 Clamping pin
9 Roll holder
10 Locking rollers
11 Locking piece
12 Firing pin spring
13 Firing pin

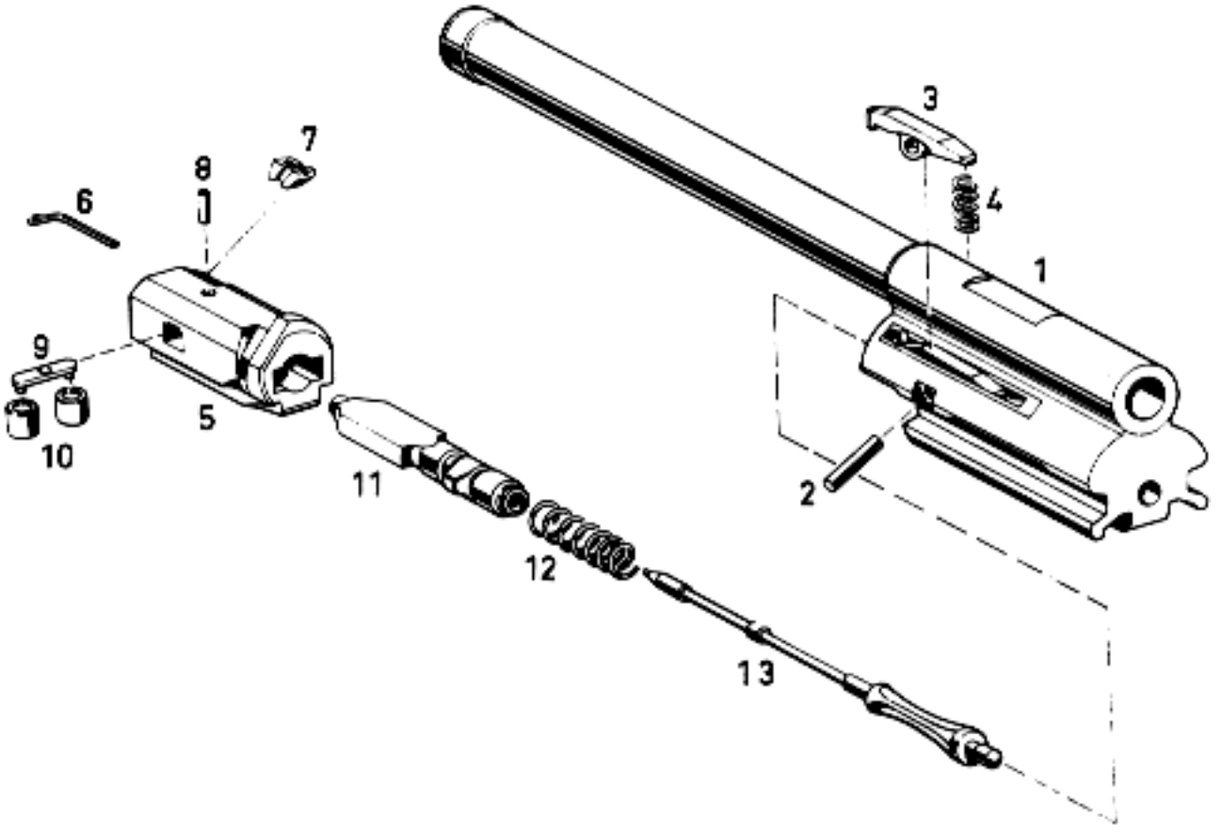

Fig. 17: Locking piece

The bolt locks the barrel at the moment of fire, it is guided in the receiver and feeds the cartridge, extracts and ejects the cartridge case, and cocks the hammer.

The bolt head carrier along with the recoil spring tube (1) carries the bolt head (5). On both sides it has studs whereby it slides in the guiding grooves of the receiver. In its longitudinal bore lies the firing pin (13) with the firing pin spring (12) and the locking piece (11). In its recess at the front side it receives the bolt head. At the upper left side of the bolt head carrier sits the bolt head locking lever (3) with bolt (2) and spring (4). The bolt head locking lever retains the bolt head by means of its shoulder at the moment the locking takes place, and a rebounding of the bolt is thus impossible.

The recoil spring tube of the bolt head carrier receives the recoil spring with recoil spring tube and the abutment for the guide ring of the recoil spring. Bolt head and locking piece are seated in the bolt head carrier and are held by the bolt head locking lever at the shoulder. It is bored and milled in order to guide the front part of the locking piece, the firing pin and the locking rollers (10) with their holding plate (9). The lower side of the bolt head is of rib-type shape. It contains a longitudinal groove for the ejector and milled-out portions to give free access to the lips of the magazine. The semicircular shoulder confines the movement of the inserted bolt head in the longitudinal direction.

The extractor (7) is located at the face of the bolt head. It is held by the extractor spring (6). With its extracting claw it gets hold of the cartridge case at the circular groove.

The locking piece in connection with the locking rollers regulates the locking and unlocking of the bolt head in the barrel extension. Its foremost part, which is flattened, slides in the bolt head. Its cylindrical rear has a nose which holds it in the bolt head carrier. The locking piece is drilled along its longitudinal axis for the guidance of the firing pin.

The firing pin fires the cartridge. It is guided in the bolt head, the locking piece and the bolt head carrier. Its collar serves as abutment for the firing pin spring.

1.5.1.3. **Grip assembly with trigger mechanism** (Fig. 18)

1 Grip assembly
2 Trigger assembly
3 Locking pin
4 Grip
5 Cylinder screw
6 Toothed washer
7 Safety mechanism

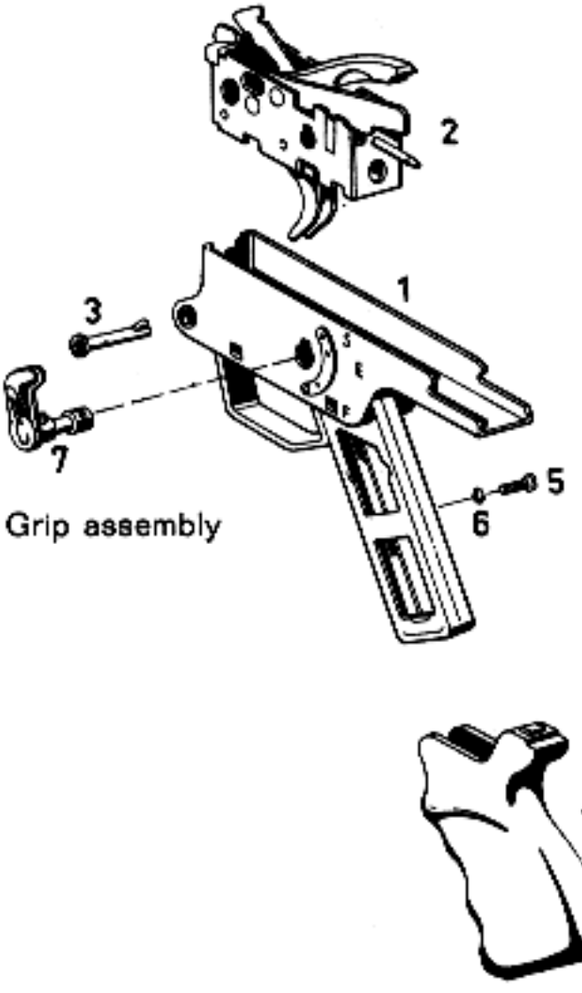

Fig. 18: Grip assembly

The grip assembly (1) serves to the insertion of the trigger assembly (2) and is fixed to the receiver by means of the locking pins (3). The grip (4) is slipped over the grip assembly and fixed by means of a lens head screw (5) which is checked by a toothed washer (6). On both sides of the grip assembly angular supports are pressed in to receive the trigger assembly. The safety pin (7) fixes the trigger case inserted in the grip. The three-position selective fire lever is situated on the left side of the grip assembly providing for:

S = safe (in white)
E = single fire (red)
F = burst (red)

A white mark on the face of the safety pin indicates also on the right side of the grip assembly the corresponding position of the selective fire lever.

Fig. 19: Safety mechanism - left side of the weapon

Fig. 20: Safety mechanism - right side of the weapon

The grip assembly (2) receives all components of the trigger mechanism, hammer, ejector and safety mechanism.

1.5.1.4. **Back plate with butt stock**

(1) **Back plate with rigid butt stock** (Fig. 21)

1 Butt stock with holder for buffer housing
2 Butt plate
3 Buffer screw
4 Toothed washer
5 Safety plate
6 Tubular rivet
7 Bush for tubular rivet
8 Back plate with recoil spring tube
9 Driving spring
10 Guide ring
11 Stop pin
12 Rivet
13 Buffer assembly
14 Countersunk screw
15 Toothed washer
16 Locking pins

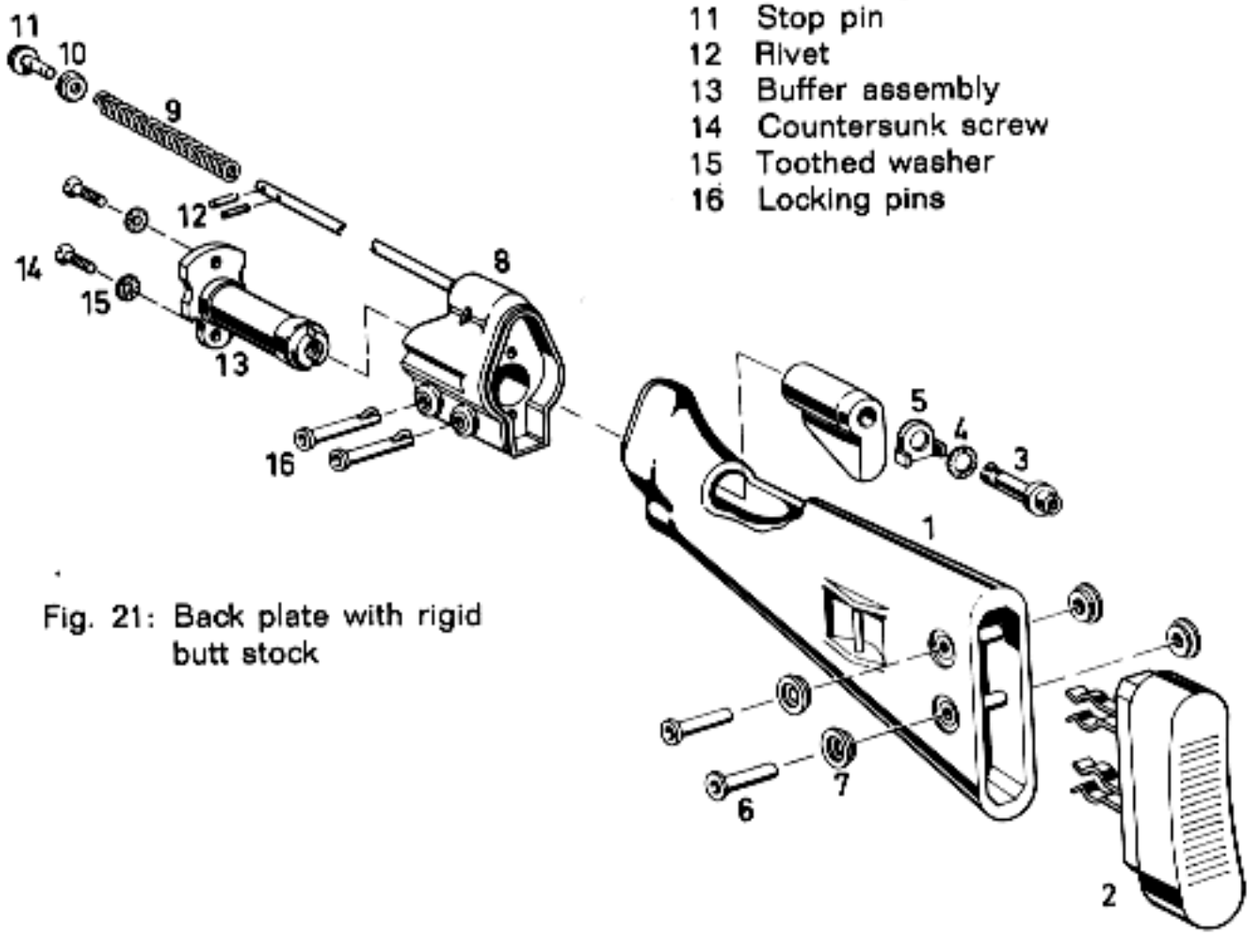

Fig. 21: Back plate with rigid butt stock

The back plate with butt stock closes the rear of the receiver. It is fixed to the latter by means of two locking pins (16). The buffer assembly (13) is located in the back plate. It is fixed above the holder for buffer housing (1) in front by means of 2 countersunk screws (14), and at the end by the buffer screw (3). The recoil spring tube is riveted in the upper part of the back plate. On the recoil spring tube slide the guide ring (10) and the driving spring (9), which are held by the stop pin (11).

The butt stock (1) permits an adequate handling of the weapon and its putting against the shoulder. On the left side of the butt stock the sling holder is trimmed in. When the weapon is stripped, the tubular rivets (6) serve as place for the locking pins. The butt stock is closed by a plate (2), the two binding springs of which catch above the tube rivets and are thus fixed.

The buffer assembly (Fig. 22)

1 Buffer screw
2 Toothed washer
3 Safety plate
4 Countersunk screw
5 Toothed washer
6 Holder for buffer housing
7 Closing screw
8 Buffer spring
9 Buffer bolt
10 Buffer housing

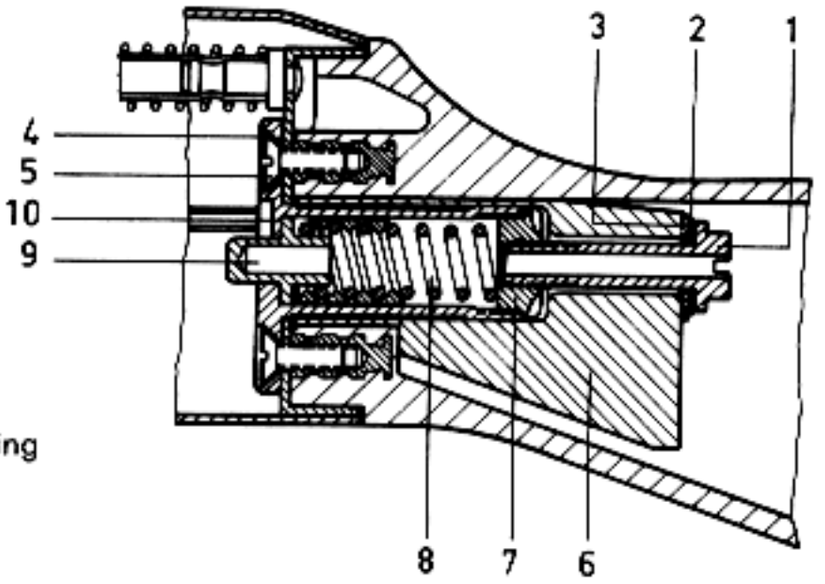

Fig. 22: Buffer assembly

The buffer assembly cushions the bolt after the shot has been fired, and throws it forward again in conjunction with the recoil spring.

(2) **Back plate with retractable butt stock** (Fig. 23)

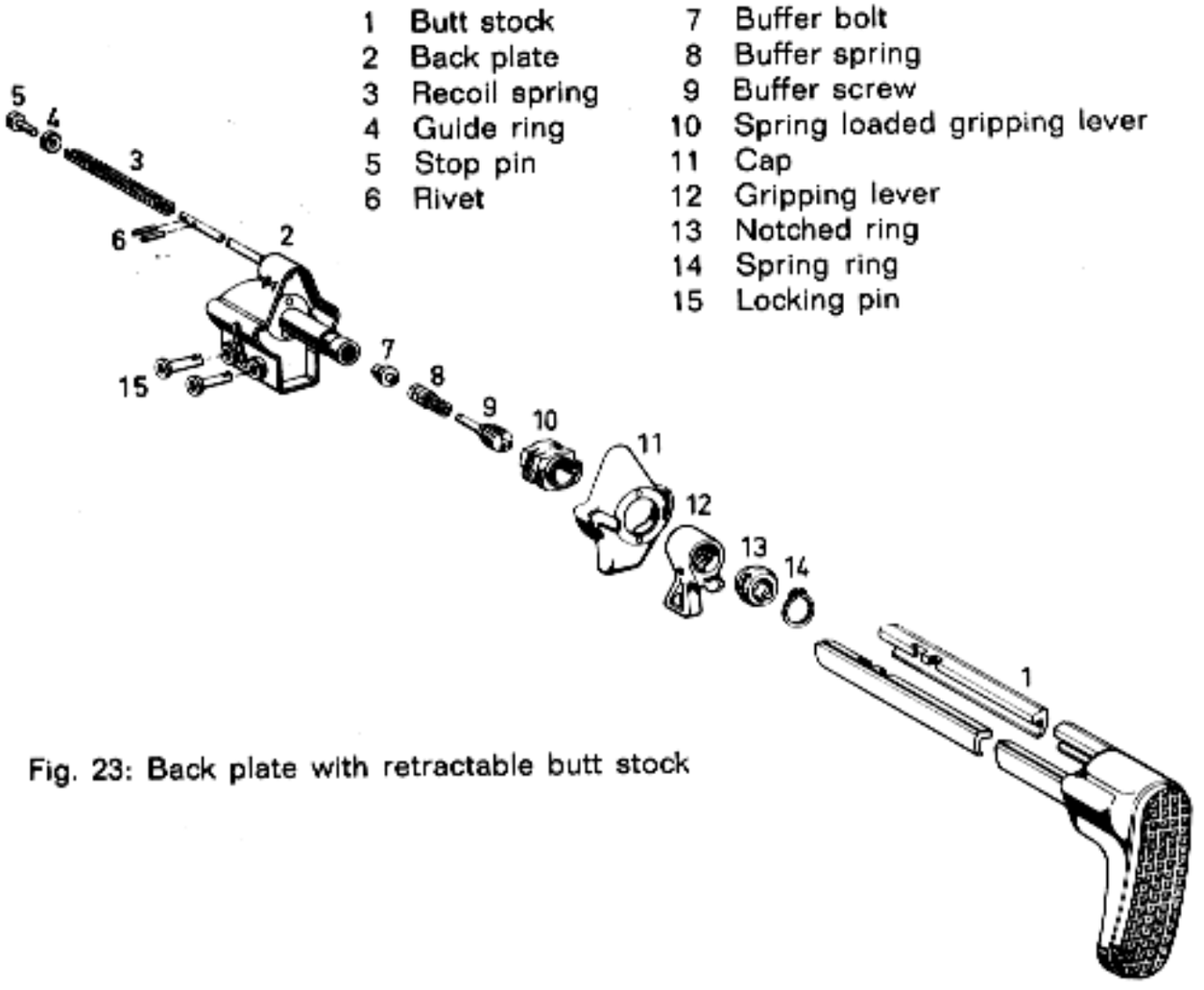

Fig. 23: Back plate with retractable butt stock

The "back plate with retractable butt stock" can be replaced by the "back plate with fixed plastic butt stock".

The spring loaded gripping lever (10), the gripping lever (12) and the notched ring (13) are placed on the buffer housing. They are held by the spring ring (14). At the rear the cap (11) covers the back plate (2).

Both guide rails are welded on to the convexedly formed butt plate. These two guide rails slide on the buffer housing and are led into the guide groove of the housing at mounted butt stock.

A reinforced butt stock cover stabilizes the butt stock (1) when launching grenades.

The buffer assembly (Fig. 24)

1 Buffer screw
2 Buffer spring
3 Buffer bolt
4 Compression spring
5 Bolt
6 Back plate

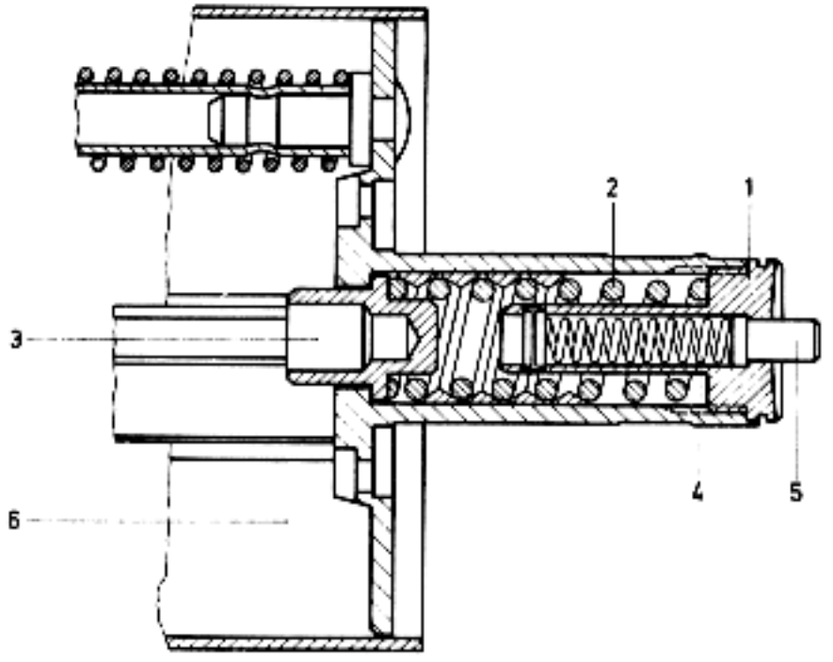

Fig. 24: Buffer assembly

The compression spring (4) with bolt (5) is located in the buffer screw (1). When unlocking the butt stock for extraction it is pushed out of its catch by means of the compression spring with bolt (4 and 5).

1.5.1.5. **Handguard** (Fig. 25)

The plastic handguard (1) covers the barrel from below and facilitates the handling of the rifle when the barrel is hot.

The lining riveted into the handguard serves as protection against heating of the handguard.

The locking pin (2) serves as fastening.

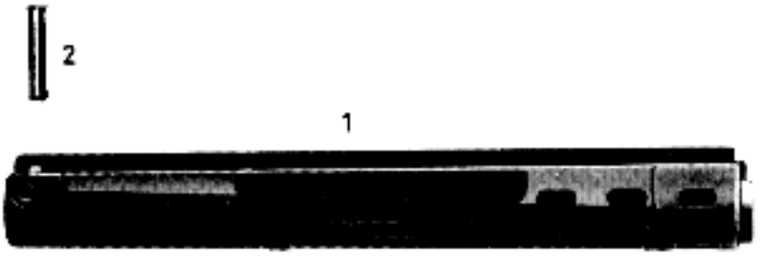

Fig. 25: Handguard

1.5.1.6. **Magazine** (Fig. 26 and 27)

1 Magazine housing
2 Follower
3 Follower spring with safety plate
4 Magazine cover

The magazine receives the cartridges and assures the cartridge feed. It is a straight box-type magazine and has a capacity of 20 cartridges.

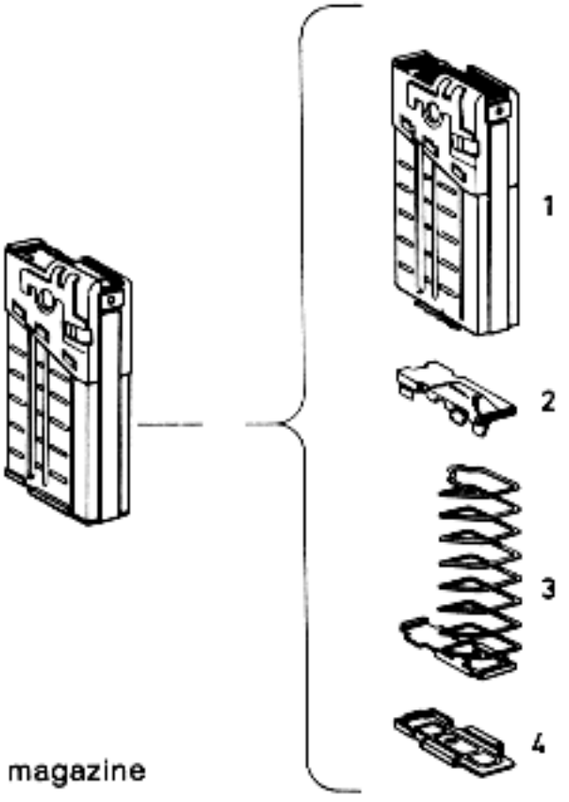

Fig. 26: Light metal magazine

Besides the above described light metal magazine (Fig. 26) a steel magazine (Fig. 27) is available.

1 Magazine housing
2 Follower
3 Follower spring
4 Magazine cover

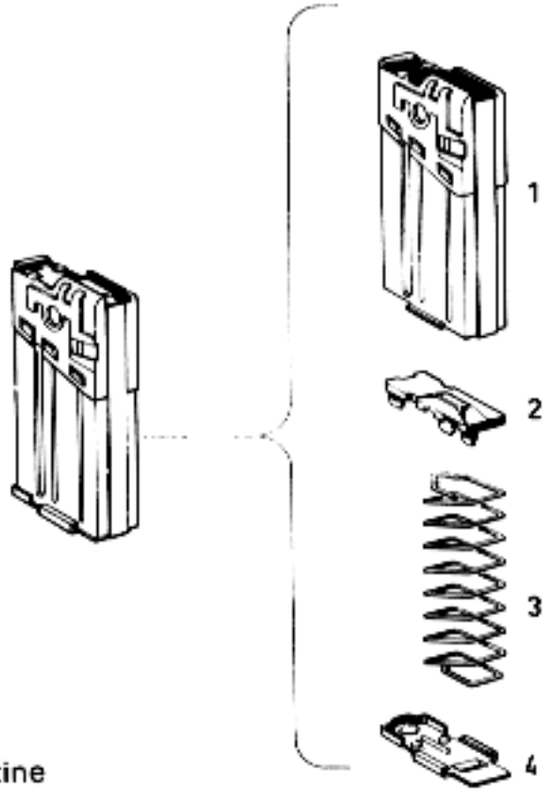

Fig. 27: Steel magazine

1.5.1.7. **Optical sighting devices**

(1) **Telescopic sight G3 with mount** (Fig. 28)

The telescopic sight is used when the Rifle G3 serves as sniper rifle. It enables the shooter to detect and aim at the target by day and in the dusk. The maximum firing range to be focussed amounts to 600 metres. At longer distances of the target it also makes the observation of the enemy and the effect on the target possible.

The telescopic sight (1) is fixed to the mount (2) by two screws (3).

The receiver of the weapon is designed to receive a telescopic sight with mount, without any special arrangements. The telescopic sight mount is marked with the corresponding final number of the weapon.

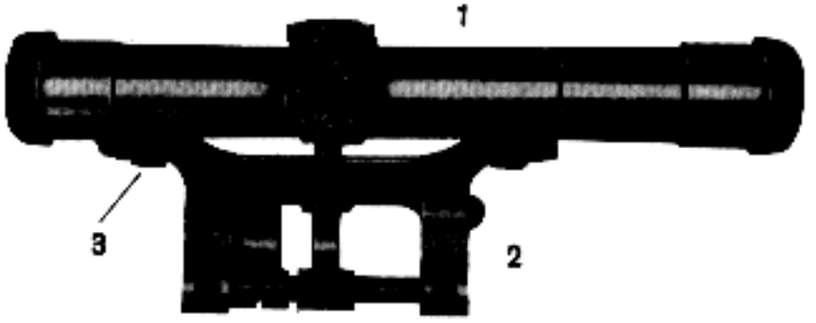

Fig. 28: Telescopic sight G3 with mount

(2) **Infra-red night sighting device with mount** (Fig. 29)

The infra-red night sighting device is intended to be used in conjunction with the Rifle G3 for aiming and observation at night with infra-red spotlight.

On night-operations it enables the shooter to observe and aim at infra-red illumination by means of the infra-red spotlight belonging to it.

The infra-red night sighting device (1) is fixed to the telescopic sight mount (2) by two screws (3).

The receiver of the weapon is designed to receive a telescopic sight mount with infra-red night sighting device without any special preparation. The telescopic sight mount is marked with the corresponding final number of the weapon.

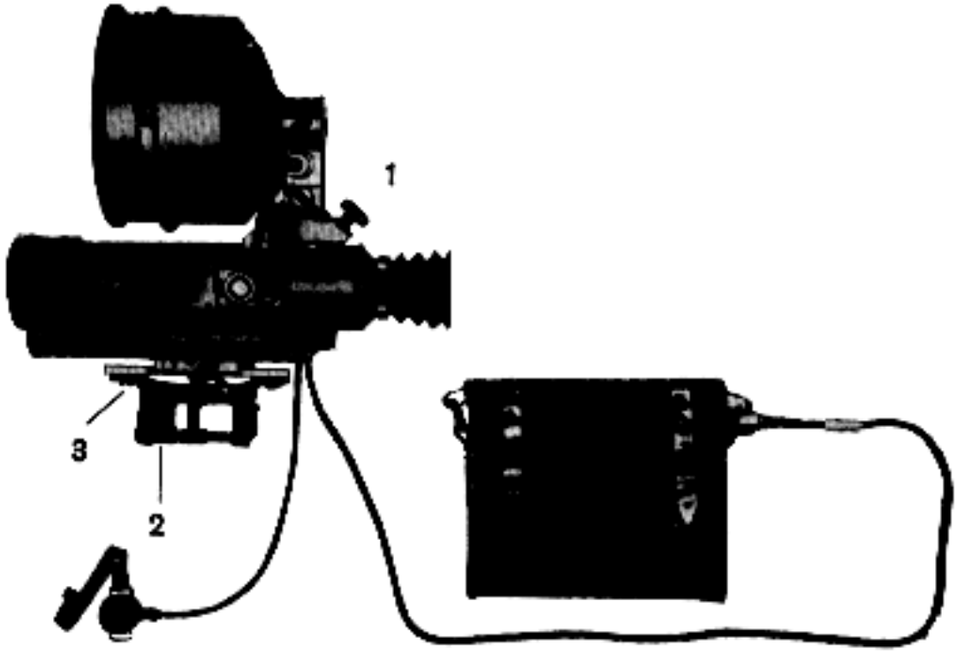

Fig. 29: Infra-red night sighting device with mount

1.5.1.8. **Training equipment**

(1) **Blank attachment** (Fig. 30)

1 Blank attachment
2 Retaining spring
3 Cylindrical pin
4 Nozzle bolt
5 Cup spring

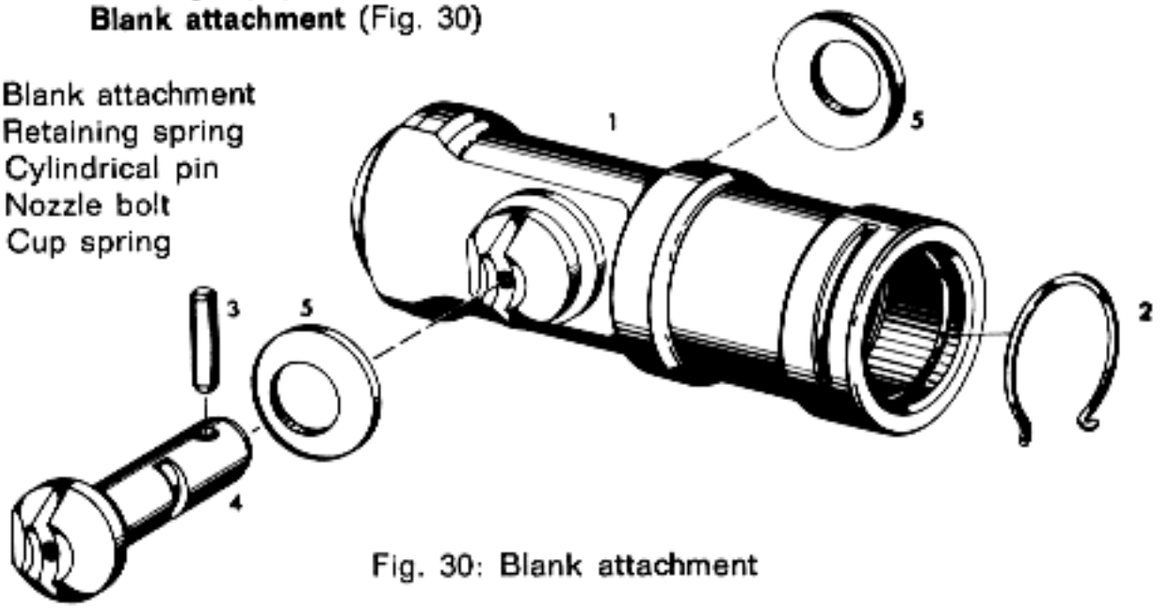

Fig. 30: Blank attachment

The blank attachment (1) is a training device for the firing of blank cartridges. It is screwed on to the barrel instead of the flash hider. The retaining spring (2) in the rear part engages in the barrel shoulder making sure that the blank attachment does not get loose by itself.

In the front part of the blank attachment the nozzle bolt (4) with cup springs (5) is placed, fixed by means of a cylindrical pin (3). The gas pressure can be regulated by turning the nozzle bolt.

The blank attachment has a **dull chromium-plated finish** to distinguish it from the flash hider.

(2) **Plastic training breech block** (Fig. 31)

1 Bolt head carrier
2 Bolt head with clutch piece
3 Firing pin
4 Firing pin spring

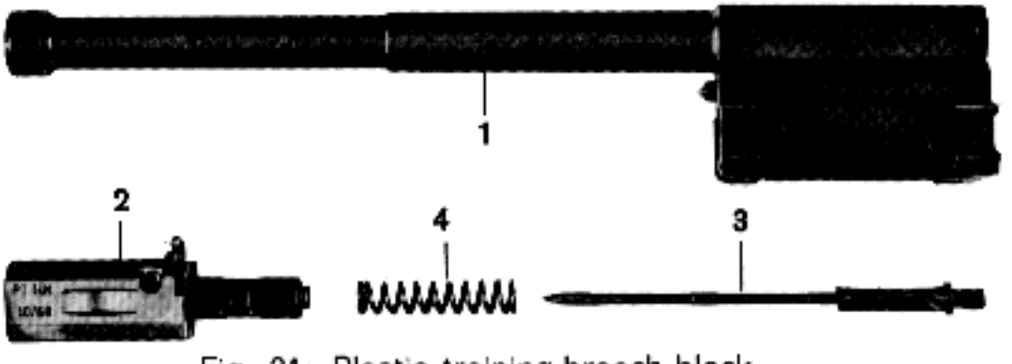

Fig. 31: Plastic training breech block

The plastic training breech block is a practice device for the firing of plastic training ammunition. It is inserted into the rifle instead of the normal bolt and is not suited for the firing of service ammunition. The weapon is fed with plastic training ammunition by means of the G3 magazine.

The dimensions of the bolt head carrier (1) correspond to those of the normal G3 bolt. A clutch piece is inserted firmly in the bolt head (2) and connects bolt head and bolt head carrier.

(3) **Subcalibre conversion kit** (Fig. 32)

1 Subcalibre tube E
2 Bolt E
3 Magazine E
4 Container E

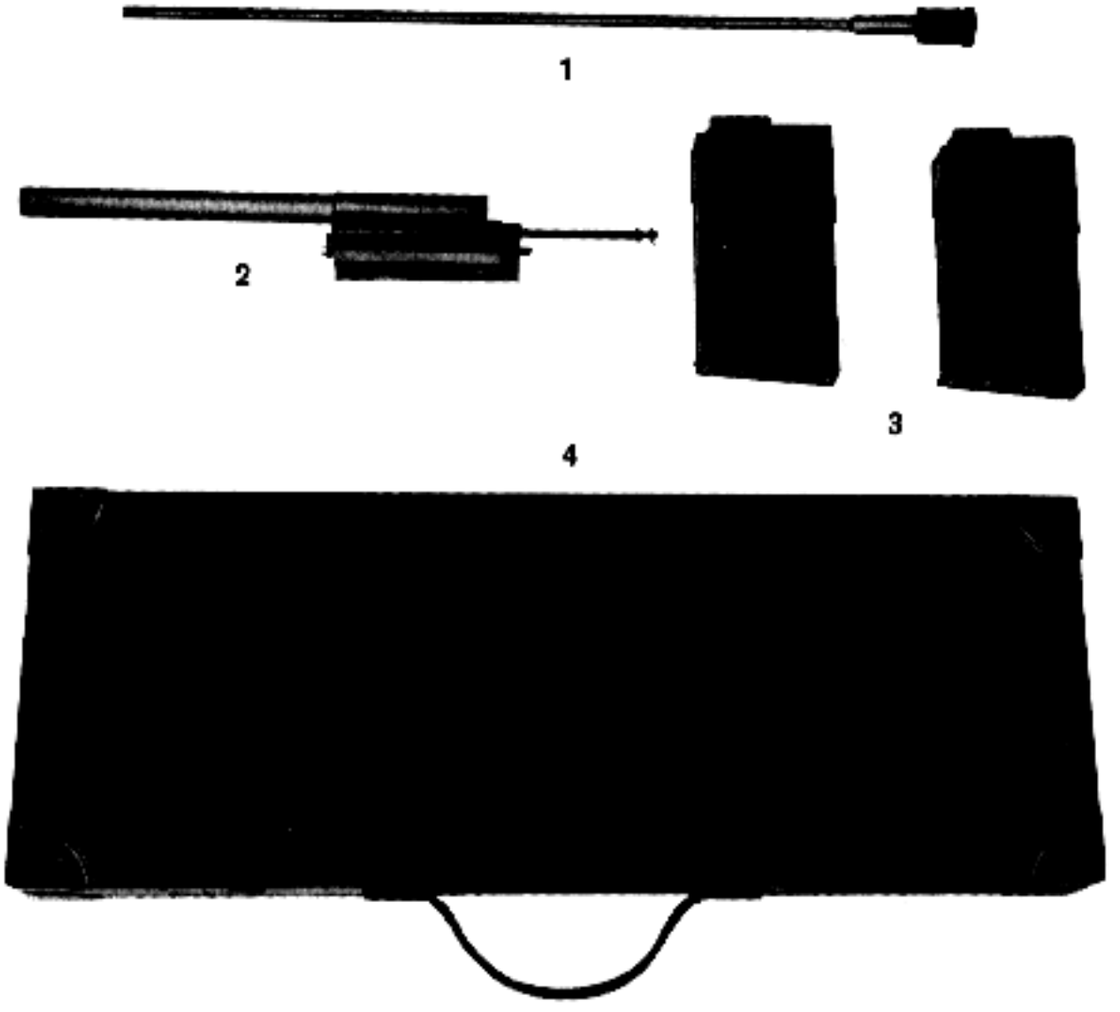

Fig. 32: Subcalibre conversion kit

The conversion kit is a training device for the firing of ammunition, calibre 5.6 mm x 16 (.22 LR).

Subcalibre tube E (Fig. 33)

1 Subcalibre tube E
2 Locking ring E
3 Bore
4 Milled surfaces
5 Cross slit

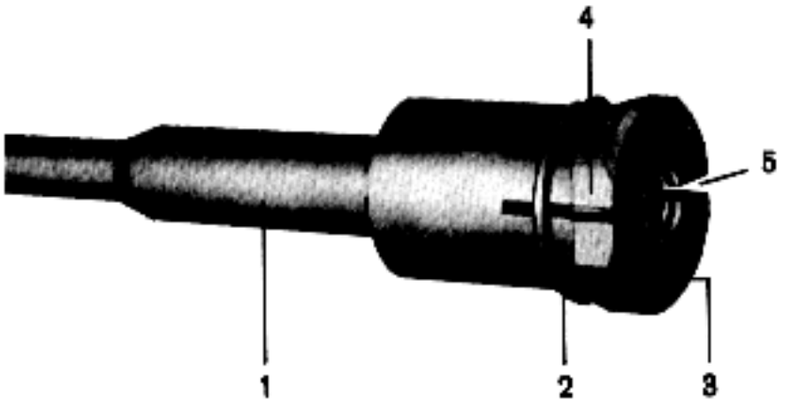

Fig. 33: Subcalibre tube E

The long part (1) of the subcalibre tube E is placed in the G3 barrel. The locking ring E (2) on the tube prevents a loosening from the barrel extension at removed magazine and opened bolt. The subcalibre tube E is additionally fixed by means of a bolt on the magazine, engaging in the bore of the tube reception (3).

The parallel sides (4) of the tube prevent it from being distorted in the receiver and barrel extension. The extractor enters into the oblique recesses (5) at closed bolt position. The chamber and the cut-in grooves are in the barrel.

Bolt assembly E (Fig. 34 and 35)

The bolt assembly E locks the subcalibre tube E when firing. It is guided in the receiver and feeds and ignites the cartridge, extracts and ejects the empty case and cocks the hammer.

1 Guide rod E
2 Bolt head carrier E
3 Bolt head E with extractor
4 Recoil spring E
5 Guide sleeve E
6 Disc
7 Buffer spring
8 Safety plate

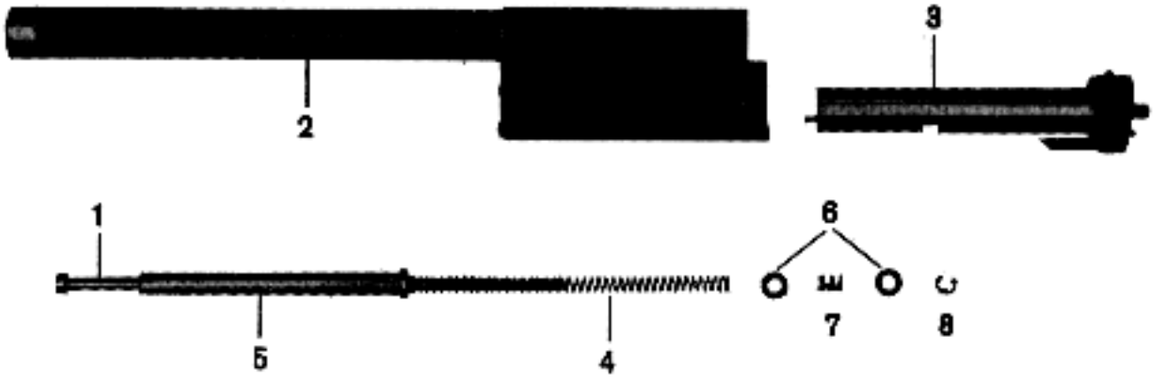

Fig. 34: Bolt assembly E

The bolt head E with extractor (34/3) connected with the guide sleeve E (34/5) is inserted in the bolt head carrier E (34/2). On the guide rod E (34/1) the recoil spring E (34/4) with disc (34/6), buffer spring (34/7) and safety plate (34/8) are placed.

The bolt head carrier is activated only when the weapon is cocked.

Bolt head E (Fig. 35)

The bolt head E (34/3) with extractor is placed in the bolt head carrier (34/2).

1 Bolt guide E
2 Extractor
3 Shock absorber
4 Firing pin
5 Firing pin spring
6 Limit stop
7 Guide plate E
8 U-clip

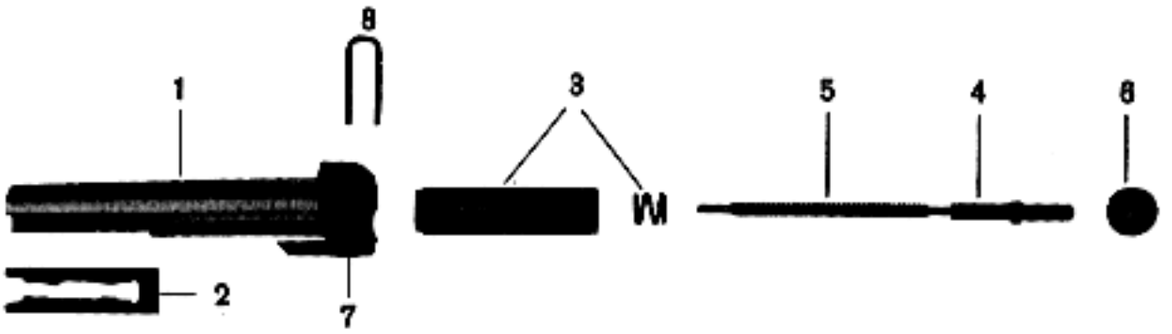

Fig. 35: Bolt head E with follower

The extractor (35/2) is detachably inserted in the bolt guide E (35/1), which receives the shock absorber (35/3) and the firing pin (35/4). The firing pin spring (35/5) and the compression spring are received by the shock absorber, the counterbearing of which is formed as limit stop (35/6). The guide plate E (35/7) is located on the rear side of the bolt guide, and at the recoil of the bolt it presses the hammer downwards with its ramp placed on the lower side. The U-clip E (35/8) locks the bolt guide above the limit stop.

Magazine E (Fig. 36)

The magazine E contains the cartridges and assures the cartridge feed. It is a bar-type magazine and has a capacity of 20 cartridges.

1 Magazine housing E
2 Follower spring
3 Magazine cover
4 Follower
5 Follower spring with safety plate
6 Magazine cover

A subcalibre magazine housing with filling piece is firmly fitted in the G3 standard magazine housing E (1). The follower spring (5) seizes the subcalibre magazine housing and the magazine cover (6) covers the lower part of the standard magazine housing.

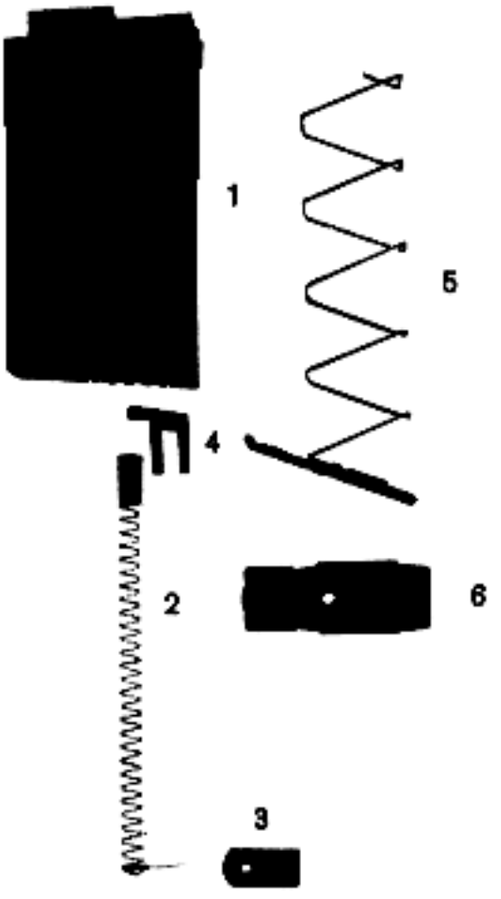

Fig. 36: Magazine E

Container E (Fig. 37)
The container receives the conversion kit E.

1 Subcalibre tube E
2 Bolt assembly E
3 Magazine E
4 Cleaning kit, cal. 5.6 mm to 6.5 mm

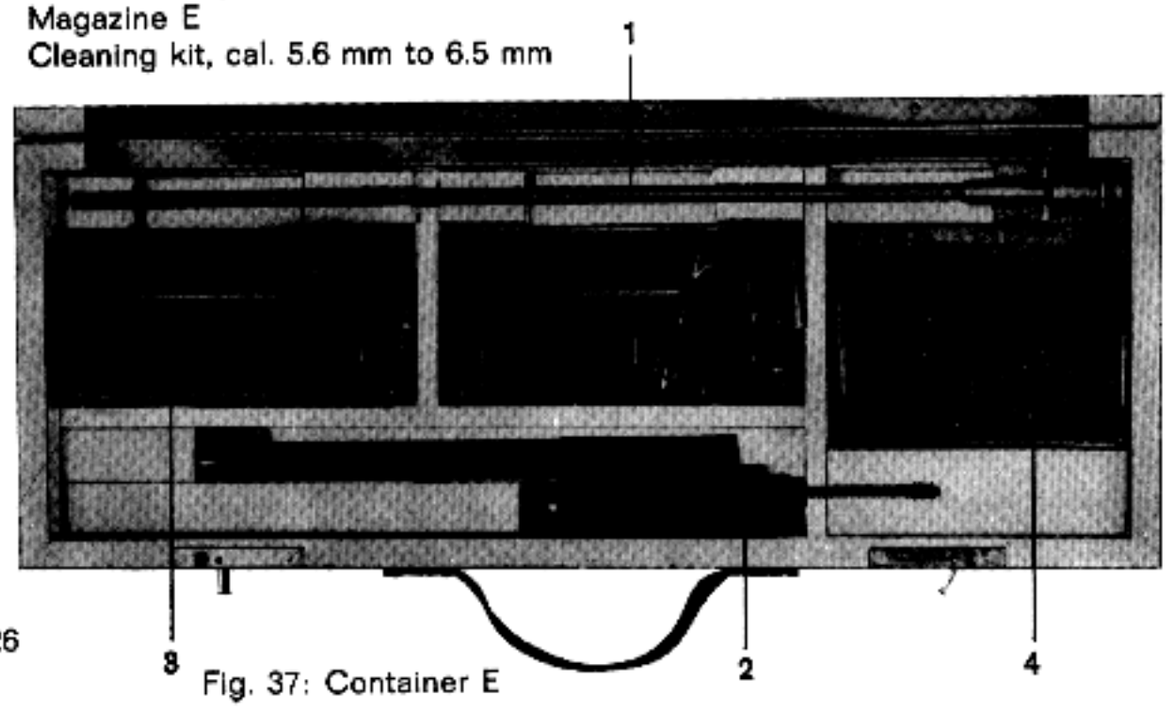

Fig. 37: Container E

1.5.2. **Operation**

1.5.2.1. **Bolt** (Fig. 38, 39 and 40)

The weapon is loaded, cocked and ready to fire. By pulling the trigger the cocked hammer is released and strikes the firing pin (38/4) which fires the cartridge (38/1) with its point. The powder gas drives the projectile down the barrel (38/5). At the same time powder gasses are forced against the cartridge case. The cartridge case transmits a part of the gas pressure to the bolt head (38/2) and thereby the backward movement is initiated.

1 Cartridge
2 Bolt head
3 Locking piece
4 Firing pin
5 Barrel
6 Barrel extension
7 Locking roller
8 Bolt head carrier

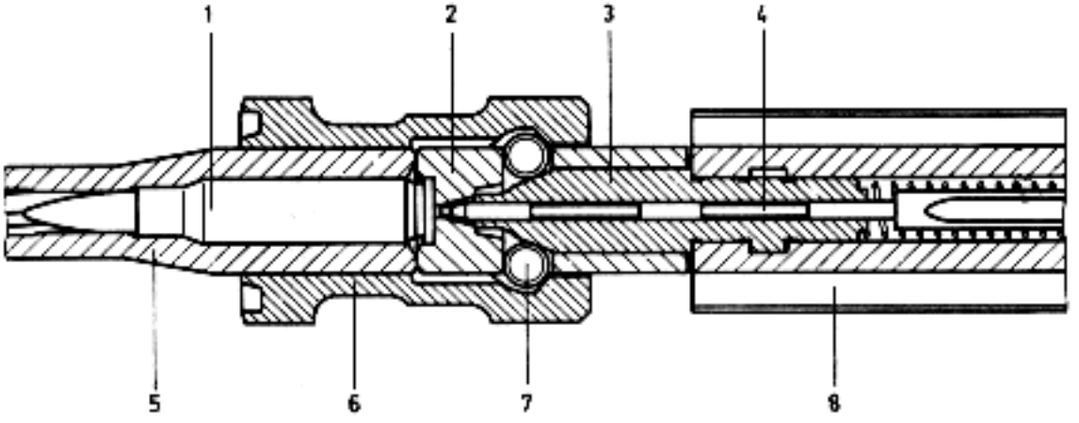

Fig. 38: Bolt in locked position

Thus the bolt head carrier (38/8) is activated by means of the locking rollers (38/7) and the locking piece (38/3) in the proportion 1:4, on which occasion the locking rollers remain locked until the bullet has left the barrel. The locking rollers emerge from the recesses (39/1) in the barrel extension (38/6) and are pressing against the inclined faces of the locking piece. The locking piece slides back and the locking rollers slip into the bolt head as far as necessary to unlock the bolt.

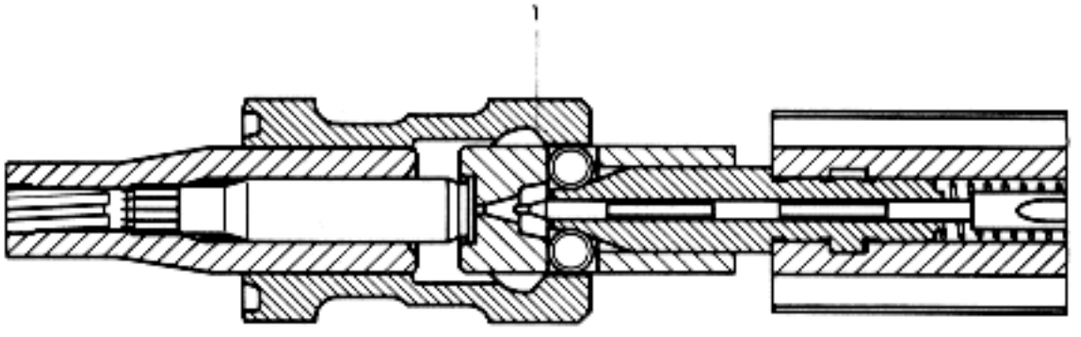

Fig. 39: Bolt in unlocked position

The locking piece with its shoulders hits the bolt head carrier and gives additional speed to same. While sliding to the rear the locking lever (40/1) engages from the bolt head.

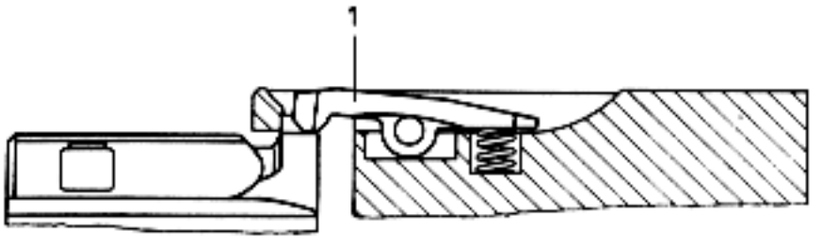

Fig. 40: Disengagement of the locking lever

Bolt head and bolt head carrier separate themselves to a distance of about 5 mm but move further backwards together. While the bolt head is moving backwards the hammer is "cocked", the recoil spring compressed, the cartridge case held by the extractor thus hits the ejector and is ejected. In its rearmost position the bolt hits the buffer and is stopped.

At the forward movement the energy of the expanding recoil spring and the expanding buffer spring pushes the bolt forward. The cartridge on top in the magazine is inserted into the chamber by the front surface of the bolt head. The extractor hooks into the ring groove of the base of the cartridge case. The locking piece with its declining faces pushes the locking rollers outwards until they support themselves in the barrel extension (38/6), which locks the weapon. At the moment the locking takes place the locking lever steps (Fig. 40) in front of the shoulder of the bolt head and prevents the bolt head to rebound.

The weapon is once more ready to fire.

1.5.2.2. **Trigger mechanism**
(Fig. 41 - 51)

1 Bolt head carrier
2 Firing pin
3 Release lever
4 Anvil for hammer
5 Trigger spring
6 Hammer
7 Safety pin
8 Pressure shank and pressure spring
9 Catch
10 Elbow spring with roller
11 Trigger lever
12 Trigger

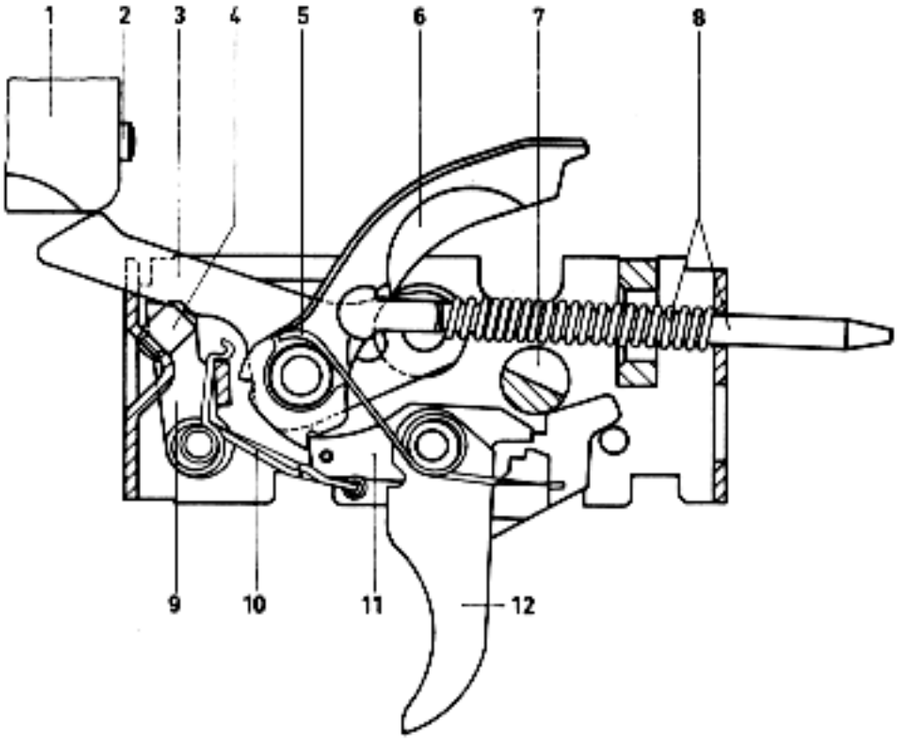

Fig. 41: Safety mechanism at position "S" = safe

The weapon is loaded and the hammer (41/6) is cocked. The safety lever (41/7) put on "S" = safe. In this position the trigger (41/12) is blocked by the safety pin and cannot be pulled.

Before firing

The safety lever put on position "E" = single fire. At single fire the trigger lever (41/11) in connection with its oblong hole (43/1), the safety pin (41/7), the elbow spring with roller (41/10), the catch for single fire (42/3) and the catch for trigger lever (42/4) as **disconnector** comes into action.

1 Sliding surface
2 Catch for burst
3 Catch for single fire
4 Catch for trigger lever
5 Recess for single fire

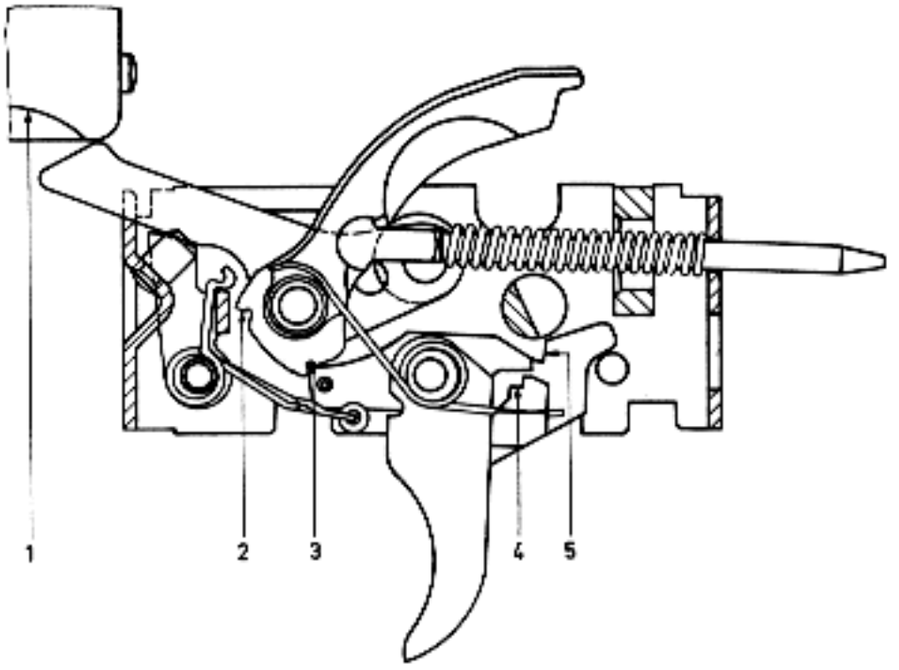

Fig. 42: Functioning position of trigger parts at position "E" = single fire

The trigger lever with its oblong hole can be shifted about 1.5 mm in its longitudinal direction.

1 Oblong hole
2 Compression bolt with spring
3 Trigger rollers
4 Surface centre of pressure

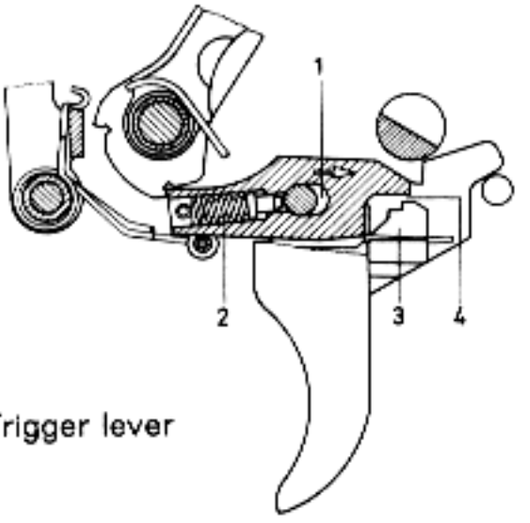

Fig. 43: Trigger lever

In unoperated position, which means without pressure from the hammer, the trigger lever is steadily being pushed forward by means of its pressure bolt with spring (43/2). As soon as the hammer with its single fire notch (42/3) comes in connection with the trigger lever, the latter is pushed backwards overcoming the power of the pressure bolt and its spring.
(Note direction of arrow in Fig. 43).
This short longitudinal movement causes a single shot. The catch with its roller (41/10) pushes at single fire the trigger lever steadily against the hammer notch.

Single fire (Fig. 44)

The bolt body presses the release lever (41/3) and thus the sear catch (41/3) forward. The hammer (41/6) is only retained by the trigger lever (41/11).

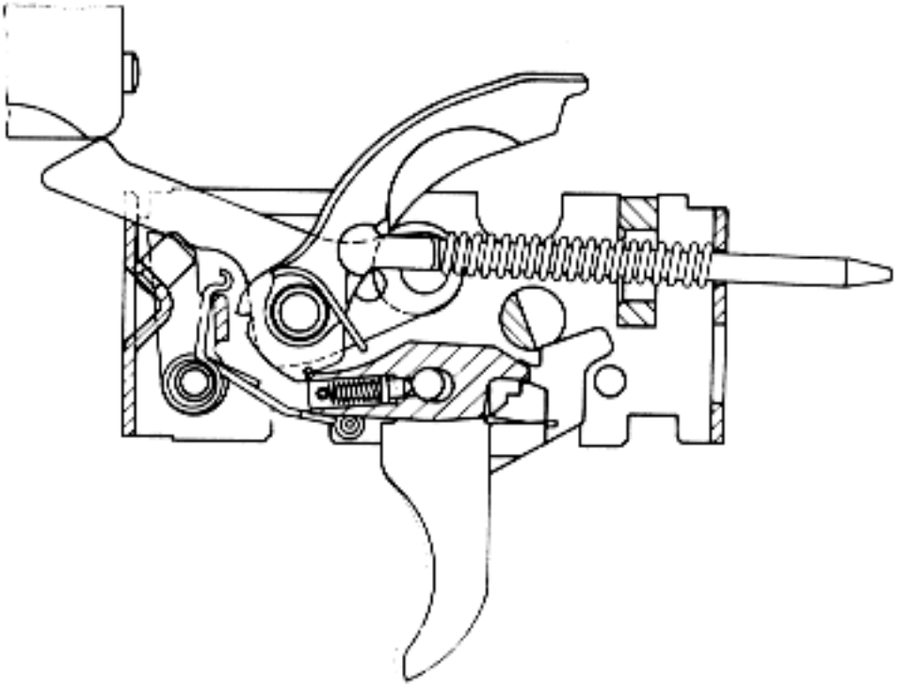

Fig. 44: Single fire function - centre of pressure -

When pulling the trigger its extending lever with its recess reaches into the groove of the safety pin limiting the movement of the trigger. At the same time the rear part of the trigger lever is being lifted, the front part lowers and disengages from the single fire notch.

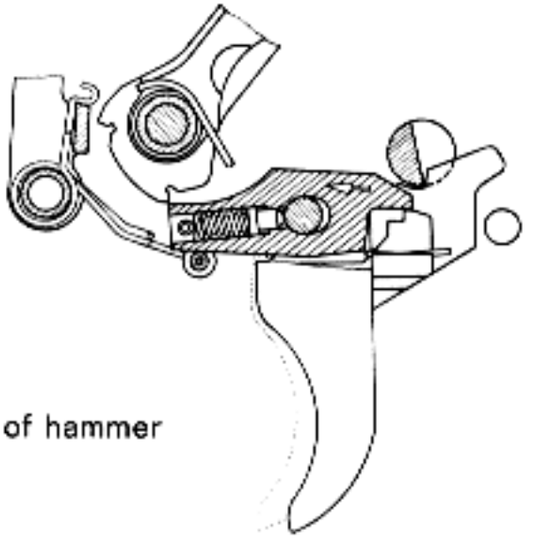

Fig. 45: Releasing of hammer

The hammer is released (Fig. 45), hits the firing pin and fires the cartridge (Fig. 46).

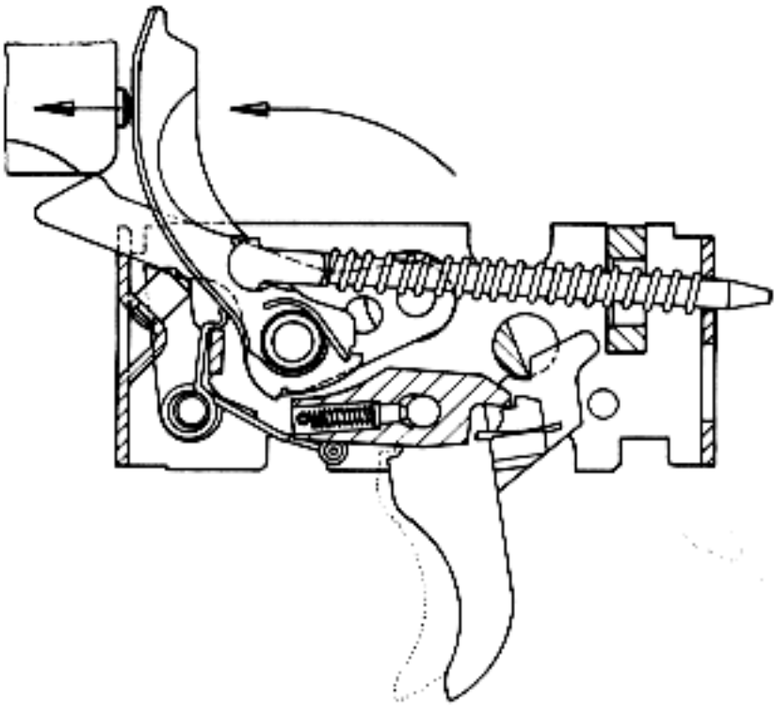

Fig. 46: Firing

At this moment the pressure on the trigger lever coming from the hammer is being taken off and the trigger lever goes forward (Fig. 47).

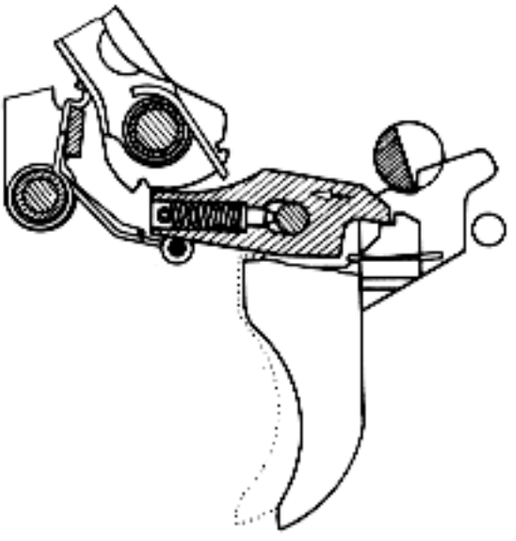

Fig. 47: After firing

The trigger is still being locked. With the forward movement of the trigger lever its rear part snaps under the pressure of the elbow spring with roller into the trigger lever notch (42/4).

Backward movement

After the cartridge has left the barrel, the bolt goes back and the bolt head carrier pushes the hammer backwards (Fig. 48).

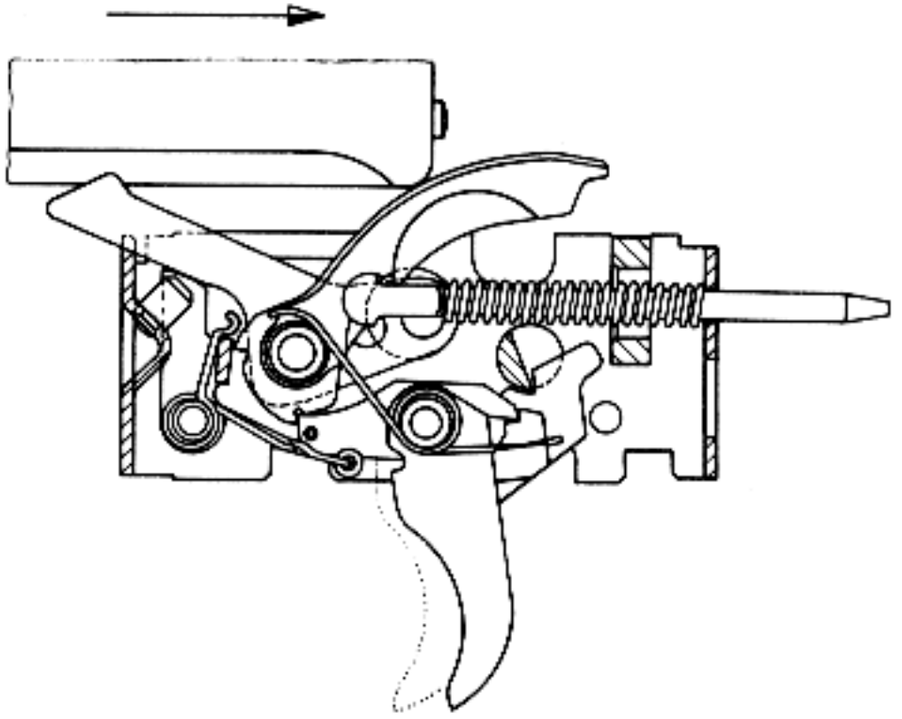

Fig. 48: Bolt backward movement

First the hammer engages in the notch for "single fire" (Fig. 49), shortly thereafter the sear catch engages in the notch for "burst" (Fig. 50). At the first engagement the trigger lever moves backwards, at the second engagement it comes forward again.

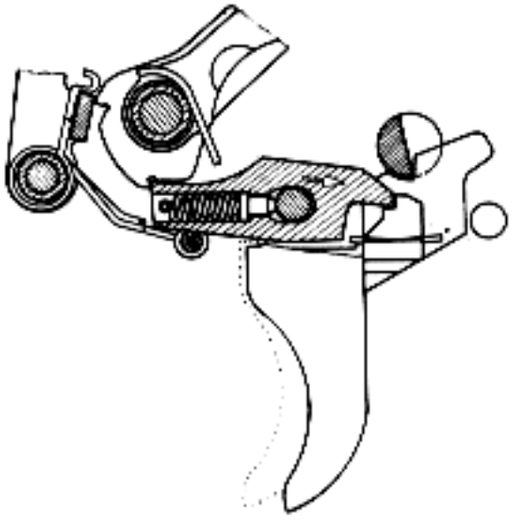

Fig 49: Hammer engaging in the notch for single fire.

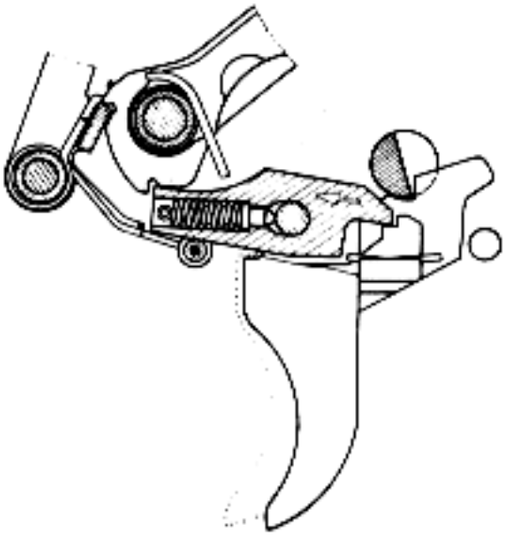

Fig. 50: Sear catch engaging in the notch for burst.

Forward movement

The bouncing off from the buffer and the pressure of the releasing recoil make the bolt head carrier move forward. The climbing ramp of the bolt head carrier (42/1) presses the release lever downwards which releases the catch.

The hammer cannot strike, but is caught on the trigger lever. The trigger lever is jammed between the notch for single fire and the trigger lever notch. **In this position the sequence is interrupted.**

To fire another shot, the trigger must be released.

After the trigger is released, the trigger lever (43/3) comes down and releases the rear part of the trigger lever. Due to the pressure from the hammer the trigger lever is pushed back, as far as the longitudinal hole makes it possible and rests over the pull-off surface (43/4). The condition for the next shot is given.

Should another shot be fired, the trigger is pulled until the pull-off (Fig. 44).

Further pull of the trigger lifts the rear part of the trigger lever, while the front part disengages from the notch for single fire (42/3).

The cartridge is fired and all functions repeat themselves.

Burst (Fig. 51)

A turn of the safety lever to "F" = burst also turns the safety pin which brings the groove in front of the extended trigger arm.

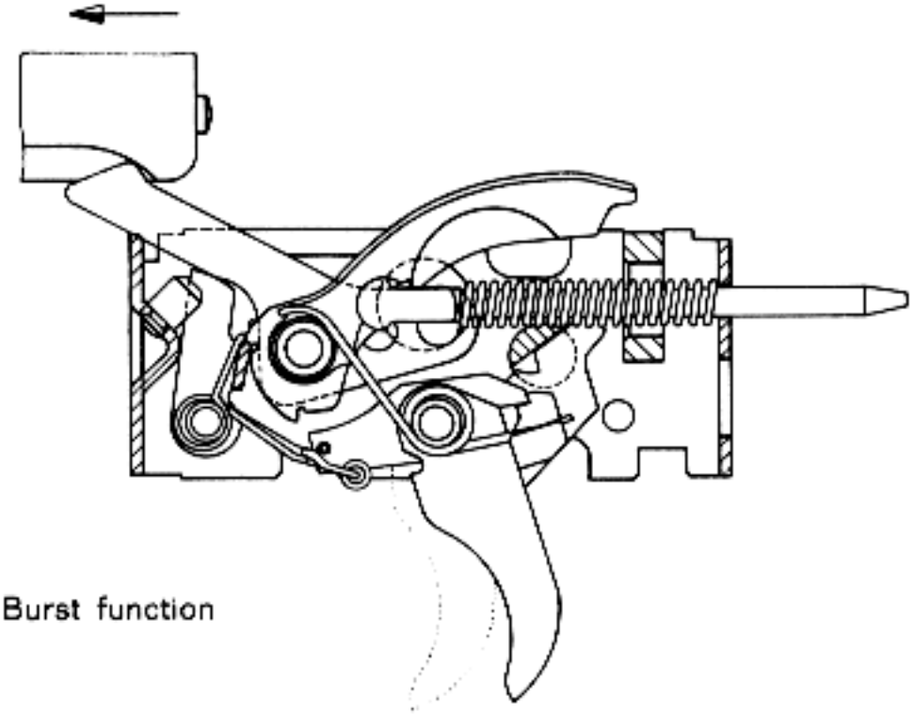

Fig. 51: Burst function

When the shooter pulls the trigger, all of the extended arm enters in the groove of the safety pin causing a longer trigger pull and the trigger lever is out of reach of the notch for single fire. The hammer is held only by the catch in the notch for burst (Fig. 50).

With every shot the release lever makes a guided motion caused by the climbing ramp of the bolt head carrier (42/1) and the catch emerges from the notch for burst. The hammer strikes the firing pin, as nothing interferes with its motion. This sequence is called automatic fire. Short interruptions of the automatic fire result in bursts.

The weapon ceases to fire when the trigger is released. The front part of the trigger swings up again and the hammer is caught in the notch for single fire.

Note!

At single fire:

The interruption of the cyclic rate is caused through the trigger lever in connection with

1. the position of the safety pin,
2. the longitudinal hole on the trigger lever,
3. the elbow spring with roller,
4. the single fire notch,
5. the trigger lever notch.

At automatic fire:

no interruption takes place:

1. owing to the position of the safety pin, which gives a longer trigger pull,
2. owing to the trigger lever which swings down until it is out of reach of the notch for single fire,
3. by means of the release lever through the catch releasing the hammer at the moment the locking takes place.

   This results in an uninterrupted cyclic rate until
   a) the trigger is released,
   b) the magazine is empty.

1.6. **Outfit**

1.6.1. **Accessories** (Fig. 52)

1 Carrying sling
2 Muzzle cover
3 Cleaning kit for weapons cal. 7.62 mm - 9 mm
4 Cleaning kit for weapons cal. 5.6 mm - 6.5 mm
5 Magazine carrying bag

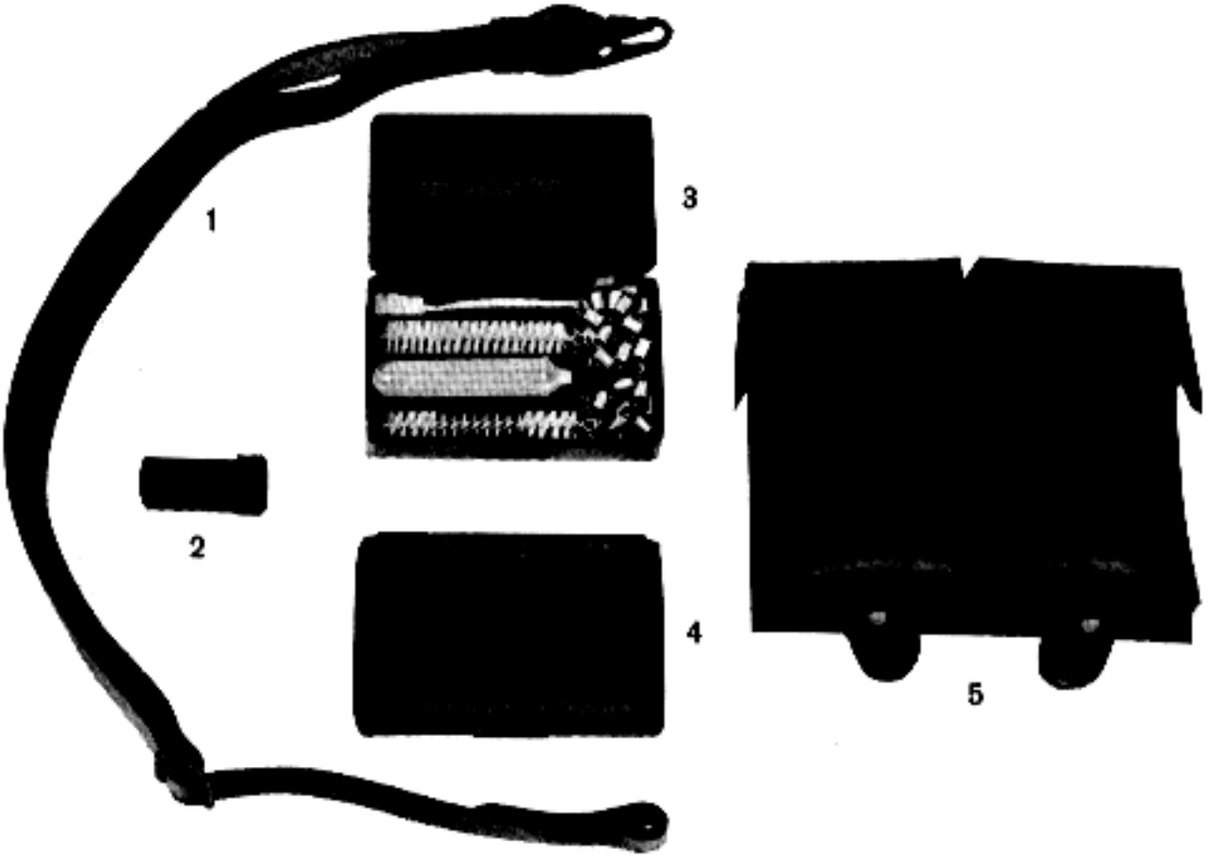

Fig. 52: Accessories

2.1. Operating instructions

2.1.1. Principles on handling and operation

1. The rifle is always to be handled as if it were loaded and ready to fire.
2. The safety pin has to point continuously at position "S" = safe. Only shortly before firing it has to be turned to position "E" = single fire or "F" = burst.
3. In handling the weapon one seizes it at the grip. When cocking, locking and loading, as well as when uncocking and unloading it, the muzzle has to point to the upper side.
4. Blank- and subcalibre ammunition may be employed only when using the training equipment (note para 1.5.1.8.) provided for it.

2.1.2. Preparation of the rifle for firing

Before loading and firing:

1. Free barrel bore from oil
2. Check, if bolt and safety mechanism function properly
3. Magazine must engage properly
4. Check, if the flash hider or rather the blank attachment fits firmly.

2.1.2.1. Loading

Before loading:

— Put safety pin on "S" = safe.
— Retract the loading lever and put it in the recess of the loading lever housing.
— Insert filled magazine in the magazine shaft until it engages.
— Let the operating handle snap forward.
— The rifle is loaded and safe.

Fig. 53: Insertion of the magazine

2.1.2.2. **Firing**

— Unlock the weapon
— Turn the safety pin to "E" or "F"
— Operate the trigger.

When the fire is interrupted or ceased, the weapon has to be locked.

2.1.2.3. **Unloading**

— Check whether safety pin is at "S" = safe.
— Take out the magazine by pushing the release lever forward.
— Draw the loading lever rearward (the cartridge is ejected) and let the lever snap forward.

Fig. 54: Removal of magazine

2.1.2.4. **Filling and emptying of magazine**

— When filling the magazine press the cartridges separately under the magazine lips.
— When emptying the magazine grasp it with one hand so that the points of the cartridge point downwards.
— Press the second cartridge down by means of a wooden chip, whereby the top cartridge falls out by itself.
— Catch falling-out cartridges, e.g. by placing the steel helmet underneath if necessary.

Fig. 55: Emptying of magazine

2.1.2.5. **Launching of rifle grenades**

— Lock the rifle.
— Remove the magazine.
— Retract loading handle and put it in the recess on the loading lever housing.
— Insert propellant charge manually into the chamber (Fig. 56).
— Have the bolt with loading handle snapped forward.
— Push the rifle grenade over the flash hider until the abutment of the front sight holder. Note that the spring ring retains the grenade. The rifle is ready to fire.

Fig. 56: Loading of propellant charge

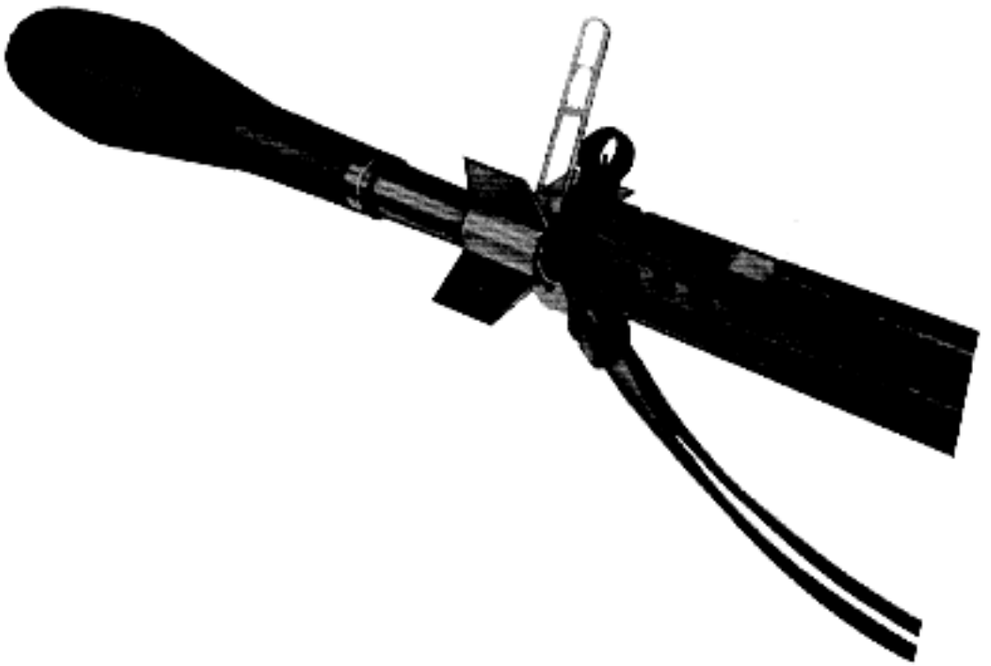

Fig. 57: Mounted rifle grenade

2.1.2.6. Firing with training equipment

(1) Blank attachment

— Lock the rifle.
— Unscrew flash hider.
— Screw on blank attachment and tighten (manually).
— Load the rifle.
— Fill magazine with blank cartridges and insert magazine.
— Unlock the rifle
— Set selective fire lever at "E" or "F".
— Pull trigger.

At interruption or cease of fire the weapon is to be locked. When regulating the gas outlet the magazine has to be removed.

— Turn the nozzle bolt by means of the cartridge case bottom.
— Position "screw slot transverse to firing direction" gas outlet "minimum".
— Position "screw slot alongside firing direction" gas outlet "maximum".

Fig. 58: Screwed-on blank attachment

(2) Plastic training breech block

— Lock the rifle.
— Extract G3 magazine and breech block (note para 2.2.2.).
— Insert plastic training breech block in the rifle.
— Check proper assembly of the rifle by making several loading movements.
— Load the rifle.
— Fill the magazine with plastic training ammunition and insert magazine.
— Unlock the rifle.
— Set the selective fire lever at "E" or "F"
— Pull the trigger

When the fire is interrupted or ceased, the weapon has to be locked.

Note: Owing to dimensional differences it is impossible to fire NATO cartridges cal. 7.62 mm x 51 with the plastic training breech block.

(3) **Subcalibre conversion kit**

— Lock the rifle.
— Extract G3 magazine and breech block (note para 2.2.2.).
— Insert subcalibre tube E in the G3 barrel from behind.
The bore on the face side has to point downwards.
Check proper fit of the subcalibre tube E by inserting the magazine E.
— Insert bolt E into the receiver.
— Check proper assembly of the rifle by moving the loading lever several times.
— Load the rifle.
— Fill magazine E with subcalibre ammunition and insert magazine.
— Unlock the rifle.
— Set the selective fire lever at "E" or "F".
— Pull the trigger.

When the fire is interrupted or ceased, the weapon has to be locked.

2.1.3. Employment of the weapon with optical sighting devices

2.1.3.1. G3 telescopic sight with mount

When using the Rifle G3 as sniper rifle the mount with telescopic sight is placed as follows:

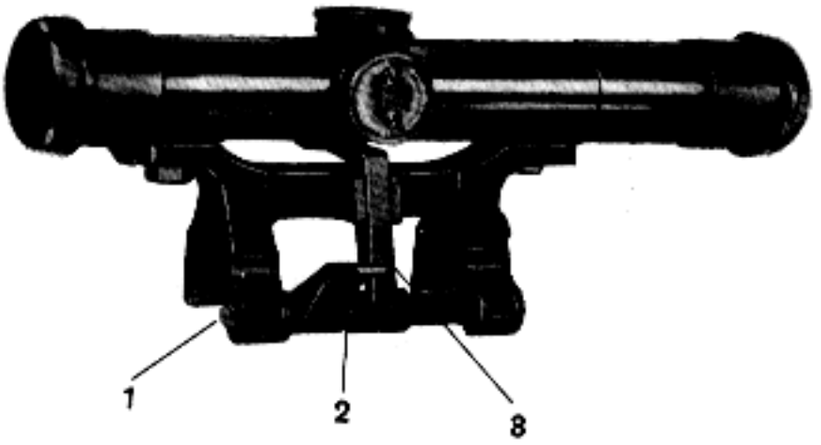

Fig. 59: Telescopic sight with mount

— Prior to the mounting, turn the claws (59/1) of the mount outwards.
— Place mount on the rifle from above, tilting the mount slightly to the right so that the plastic nose is adjacent to the sight cylinder.
Note designations "firing direction" and "arrow".
— Press tension lever (59/2) downwards until the catch (59/3) engages audibly (Fig. 60).
— Turn tension lever upwards.

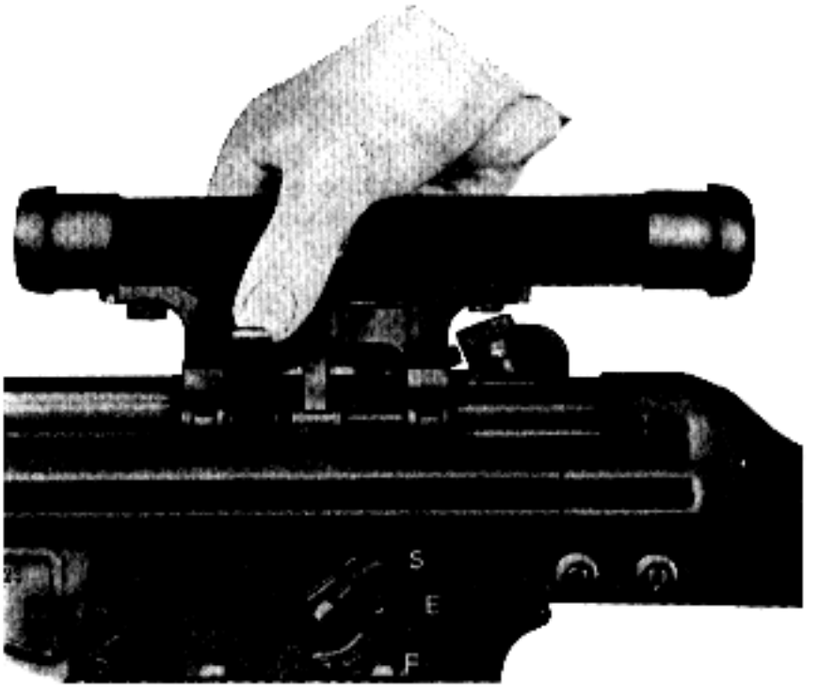

Fig. 60: Placing of the telescopic sight with mount

— To remove the telescopic sight with mount, turn tension lever downwards.
— Press catch downwards with the thumb (Fig. 61) and turn tension lever upwards again.
— Tip the telescopic sight with mount off the weapon to the right.

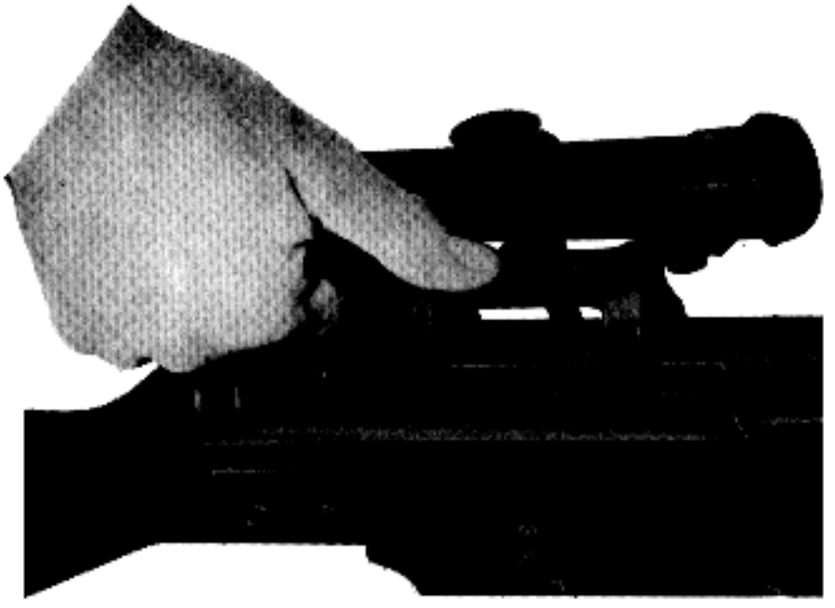

Fig. 61: Removal of the telescopic sight with mount

For putting the telescopic sight into the carrying bag, turn the claws accordingly to the inside.

2.1.3.2. **Infra-red night sighting device with mount**

When using the Rifle G3 as aiming- and observation device with infra-red spotlight, the mount has to be placed on the receiver of the weapon.

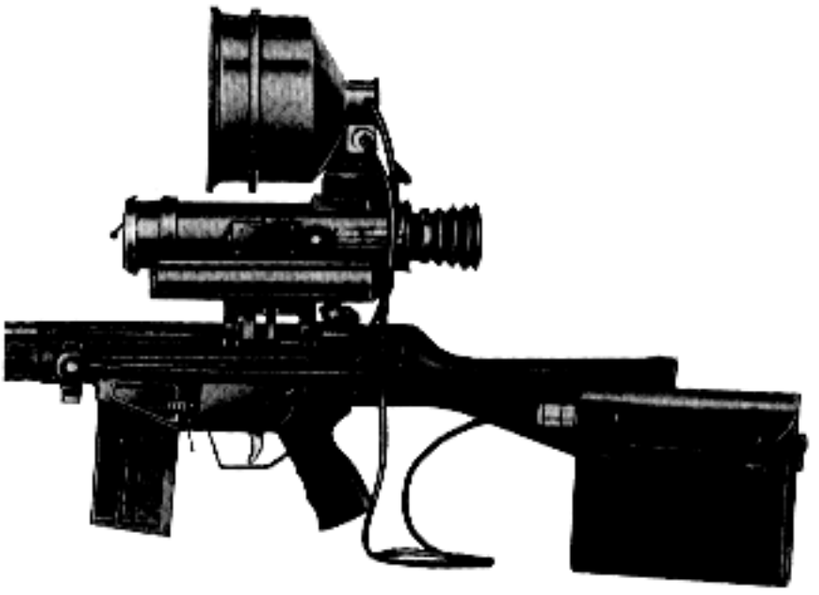

Fig. 62: Attached infra-red night sighting device with mount

The infra-red night sighting device with mount is on principle **attached** in the same way as the telescopic sight with mount. In addition, the press-button switch with its holding device is fastened on the weapon according to the desired firing position, so that it can easily be operated with the left hand.
The infra-red night sighting device with mount is on principle **detached** in the same way as the telescopic sight with mount.

2.1.4. **Employment of the weapon on extreme climatic conditions**

No special treatment of the weapon is necessary in case of dampness, great heat, and cold down to approx. - 40° C.
The rifles, training equipment and optical sighting devices are not to be taken from the cold into the warmth and a little later into the cold again, since otherwise the functioning of the weapon will suffer because of moisture, sweat, ice formation and rust.

2.2. Maintenance

2.2.1. General

The correct maintenance of the weapon
— guarantees readiness to fire,
— reduces premature wear,
— prevents accidents,
— saves repair costs and time.
The user (bearer of the weapon)
— is responsible for
  — cleaning,
  — maintenance,
  — general state,
  — completeness (of accessories as well) of the weapon committed to his charge,
— has to report damages and malfunctions immediately.
The cleaning has to be carried out
— as main cleaning
  — after each firing,
  — when the weapon got wet and/or,
  — when the weapon is dusty,
— as normal cleaning
  — in regular intervals when not used,
  — after each time the weapon has been used, causing no main cleaning.

After each cleaning and assembly of the G3 it has to be checked with regard to intactness and perfect function.

2.2.2. Disassembly and reassembly of rifle and training equipment for cleaning

The rifle and the training equipment can be disassembled without any tools. If several rifles and training equipment are stripped to be cleaned in the same room, one has to see to it that the parts are not mistaken. To avoid any confusion, the main parts of the weapon, like receiver, bolt head carrier, bolt head, locking piece, grip assembly and back plate are marked with the last 3 figures of the weapon's registration number.

Disassembly of the rifle

Lock the weapon!
— Remove the magazine,
— Unload the rifle,
— Check whether the barrel is clear,
— Unhook the sling at the front sight holder.

— Press out both locking pins at the back plate and put them into the tubular rivets of the butt stock.
— Draw back and remove the back plate with butt stock (Fig. 63).

Fig. 63: Remove back plate with butt stock

— Swing off the grip assembly,
— Loosen the locking pins and the grip assembly,
— Draw bolt rearward with the loading lever and catch the bolt that slides out (Fig. 64).
— Push the loading lever forward again.

Fig. 64: Remove the bolt

— Unscrew flash hider or rather the blank attachment,
— Put out the locking pin of the handguard, and remove the handguard.

Bolt stripping. The bolt should be disassembled only on the occasion of a main cleaning. In order to dismount the bolt you grasp the bolt head carrier with one hand, turn the bolt head with the other, and strip it off the bolt head carrier (Fig. 65).

Fig. 65: Disassembly of the bolt

Turn the locking piece somewhat, whereby the firing pin and the firing pin spring get free and can be taken out of the locking piece (Fig. 66).

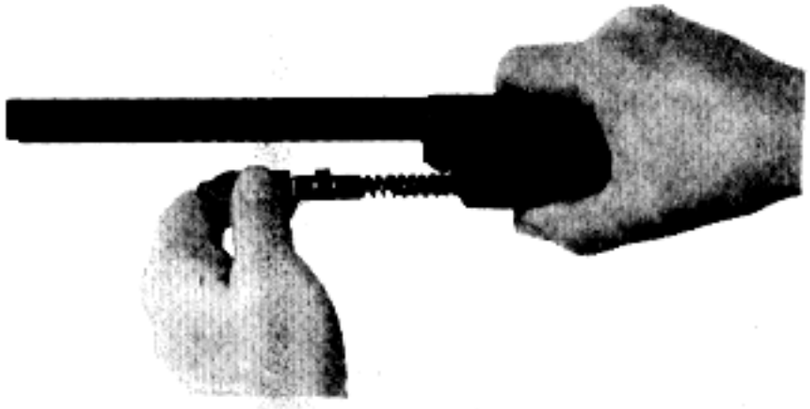

Fig. 66: Remove locking piece with firing pin spring

The reassembly of the bolt is done in reverse sequence, and the following should be noticed:
Press the stud of the locking piece into the recess of the bolt head carrier until it locks, and turn it approx. 90° in the direction of the check lever.
Set the bolt head on the locking piece in such a way that the tapered face of the bolt head fits under the stud of the check lever.
Push the bolt head until it stops overcoming the press of the check lever. Pull the bolt head approx. 5 mm forward in this position.
Turn bolt head so far that its lower side forms one straight line with that of the bolt head carrier.

The disassembly of the grip takes place only on the occasion of a main cleaning:
— Release trigger,
— Put safety lever vertically upward and pull it out,
— Remove trigger housing from the grip.

The reassembly of the grip is done in reverse sequence, thereafter put safety lever at "S" = safe.

Reassembly of the rifle

The reassembly of the rifle is done in the reverse sequence.

— Push the assembled bolt into the receiver. Locking rollers must rest inside the bolt head. (See assembly of bolt).
— When attaching grip assembly, note that the ejector is pushed downward

Fig. 67: Reassembly of the rifle

Check correct assembly of the rifle by carrying out several loading operations.

Disassembly and reassembly of the magazine

— Magazine is held with one hand whereby the magazine cover points upwards.
— Push in the safety bolt of the magazine cover by means of a small piece of wood, and shift the magazine cover off (Fig. 68).
Note that the liberated safety plate is under heavy spring pressure.

Fig. 68: Removal of the magazine cover

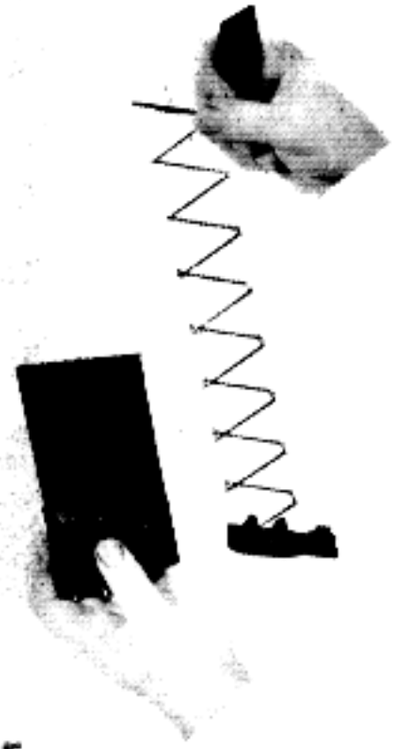

Fig. 69: Reassembly of the magazine

— Take off follower and follower spring (Fig. 69).
The reassembly of the magazine is done in reverse sequence (Fig. 69).

Blank attachment

It is not necessary for the user to disassemble the blank attachment.

Plastic training breech block

The plastic training breech block should be disassembled only on the occasion of a main cleaning.

— Turn the bolt head away from the bolt head carrier and remove it (Fig. 70).

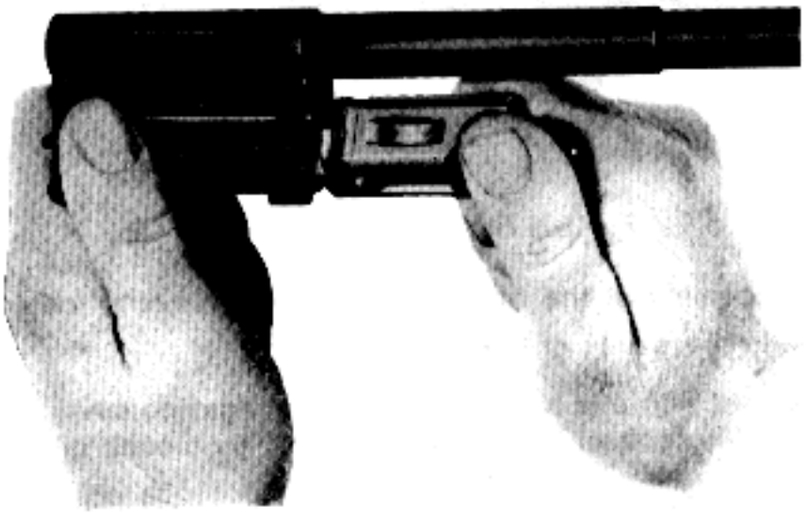

Fig. 70: Disassemble plastic training breech block

— Remove firing pin and firing pin spring from the bolt head.

The reassembly of the plastic training breech block is done in the reverse sequence.

Subcalibre conversion kit

— Remove snap ring from the guide rod.
— Remove rearwards bolt head with guide bush and recoil spring with bolt head carrier E (Fig. 71).
— Remove forward guide rod E from the bolt head carrier E.

Fig. 71: Remove bolt head E

— Remove plug safety on the bolt cylinder by means of the cartridge case bottom (Fig. 72), remove shock absorber, firing pin, firing pin spring, compression spring and flange.

— Unhinge extractor by means of a cartridge case (Fig. 73).

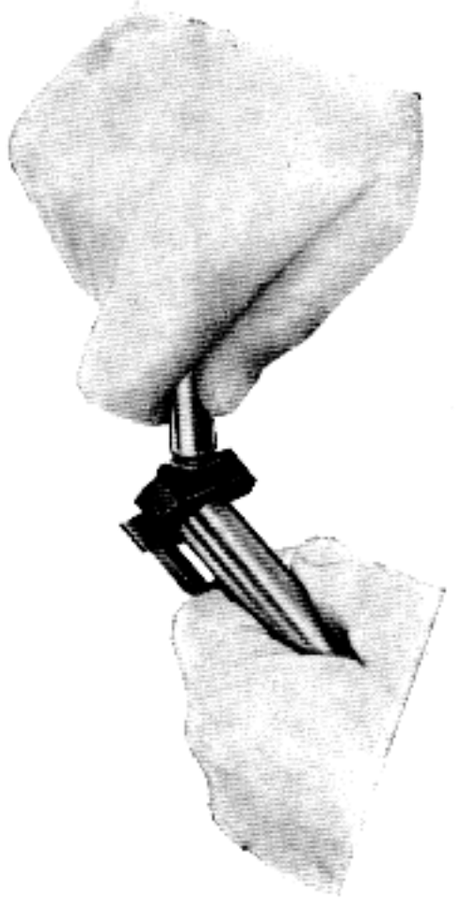

Fig. 72: Disassemble bolt head E

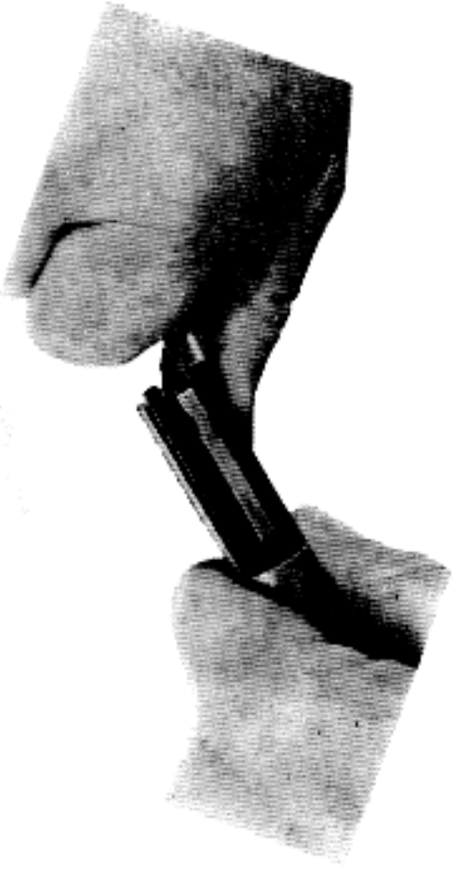

Fig. 73: Unhinge extractor

The reassembly of the subcalibre conversion kit is done in the reverse sequence.

Disassembly and reassembly of the magazine E

— Remove magazine cover on magazine.
— Remove follower spring with safety plate from the G3 magazine receiver.
— Press in safety pin on the subcalibre magazine cover by means of a small piece of wood, turn magazine cover to the right and remove it (Fig. 74).
— Remove follower and follower spring with safety plate from the subcalibre magazine.

Fig. 74: Remove magazine cover

The reassembly of the subcalibre magazine is done in the reverse sequence.

The user is not allowed to carry out a further disassembly of the G3 or rather of its assembly groups and the training equipment than described in item 2.2.2.

2.2.3. Time schedule for maintenance

No.	Maintenance part	Cares	Delay			
			after use	before firing	after firing	once a week
1	Barrel	clean and lubricate	x		x +)	x
	Barrel	free from oil		x		
2	Flash hider	clean and lubricate	x		x	x
	Flash hider	check proper fitting		x		x
3	Rotary rear sight	clean and check		x		
	Rotary rear sight	clean and lubricate	x		x	x
4	Bolt	clean and lubricate	x		x	x
	Bolt	disassemble, clean and lubricate				x
5	Butt stock	clean	x		x	x
	Butt stock, retractable	clean and lubricate	x		x	x
	Recoil spring guide rod with recoil spring	clean and lubricate	x		x	x
6	Grip assembly with trigger mechanism	clean and lubricate	x		x	x
7	Handguard	check proper fitting	x	x	x	x
8	Magazine	check whether damaged	x	x	x	x
	Magazine	clean and lubricate	x		x	
		disassemble, clean and lubricate				x
9	Blank attachment	clean and lubricate			x	x
10	Plastic training breech block	clean and lubricate			x	x
11	Subcalibre conversion kit	clean and lubricate			x	x
12	Accessories	clean, check	x		x	x

+) To clean and lubricate the three days running after shooting.

2.2.4. Maintenance instructions

(1) **The main cleaning** is to be carried out **after each firing.**

- — Clean the barrel, which should be luke-warm and not hot, with an oiled cleaning brush,
- — let the oil react for some hours,
- — then pull the oiled cleaning brush several times through the barrel,
- — finally use dry cleaning patches on cleaning chain until the barrel is clean,
- — then oil the bore of the barrel slightly,
- — repeat cleaning and oiling at least 3 days running.

when the weapon got wet and/or dusty

- — disassemble, as far as allowed (see para 2.2.2.),
- — clean and dry it using cleaning rags and small pieces of wood,
- — remove dirt and dust from seams and angles by means of the cleaning brush,
- — clean the barrel by means of cleaning brushes and patches on cleaning chain,
- — then oil barrel and sliding parts a little again.

(2) **At the normal cleaning** at least

- — the barrel has to be passed through, then oiled and
- — the whole weapon with its assembly groups — (disassembly, see para 2.2.2.) — has to be checked with a view to dirt or rather oil indurations, and if necessary it has to be cleaned and oiled again.

2.2.5. Special hints regarding means and tools for maintenance

For the cleaning and maintenance must be used o n l y

- — the cleaning kits for weapons cal. 7.62 mm to 9 mm
- — clean patches and cleaning rags, if necessary also a small piece of wood,
- — the multi-purpose anticorrosive agent 0-190.

It is not allowed to clean the weapon

- — by means of metal objects (except weapons' cleaning kit),
- — by means of synthetic materials (e.g. nylon),
- — by means of chemical treatment (also treatment with or rather boiling in water, addition of cleaning material to be bought on the market).

2.2.6. Functioning test

1. Check empty magazine, insert and extract it.
   - — The follower has to be moved downwards freely in the receiver by hand (small piece of wood) and must be pressed upwards again without trouble by the follower spring.
   - — The magazine must not jam in the magazine shaft. The magazine catch must retain it firmly without play under severe spring pressure.

2. **Put at "safe"!**

   — Draw the operating handle rearward and engage it in the recess of the housing.
   — Check whether barrel is free.
   — Insert magazine filled with two dummies into the magazine holder of the weapon.
   — Allow the operating handle to snap forward, whereby one dummy is inserted in the chamber.
   — Load, whereby the first dummy is extracted and ejected, and the second dummy is fed.

3. **Operate safety mechanism**

   — At moderate resistance it must be possible to turn the selective fire lever from the upper position (white "S" = safe) to the medium position (red "E" = single shots) and to the lower position (red "F" = burst).
   — Note that it locks in the final positions.

4. **Operate trigger mechanism**

   — Unlock unloaded weapon.
   — With the hammer in locked position it must be possible to pull the trigger backward against increased pull-off, until the hammer is released,
   — with the hammer in unlocked position it must be possible to pull the trigger backward against slight pull-off.

2.2.7. **Causes of malfunction and their elimination by the rifleman**

Principle! Operate the operating lever and continue firing.
If misfire or stoppage occurs, lock the weapon, take off the magazine, unload the weapon and find cause.

Possible incidents	Cause	Corrective measures
1. Bolt moves forward without cartridge feed.	a) Magazine is not inserted properly.	a) Insert magazine properly.
	b) Magazine is loose.	b) Check magazine catch; if used, hand it in for overhaul.
	c) Magazine lips are deformed.	c) Change magazine and hand the damaged one in for overhaul.
2. Cartridge case is not ejected.	a) Extractor or extractor spring is broken.	a) Hand it in to have it repaired.
	b) Ejector is defective.	b) Hand it in to have it repaired.
	c) Fouled chamber.	c) Clean chamber.
3. Cartridge is not fired.	a) Firing pin is broken.	a) - c) Hand it in to have it repaired.
	b) Firing pin is too short.	
	c) Firing pin spring is used up or broken.	
	d) Faulty ammunition.	d) Loading.
4. Bolt not completely closed, cartridge fed insufficiently.	a) Fouled chamber.	a) and b): Cleaning.
	b) Barrel extension is fouled.	
	c) Cartridge is deformed.	c) Change the cartridge.
	d) Recoil spring is worn out.	d) Hand in the weapon for overhaul.
5. Weapon locks irregularly.	a) Chamber is fouled.	a) Cleaning.
	b) Magazine is not inserted properly.	b) Proper insertion of magazine.
	c) Magazine fouled or deformed.	c) New magazine to be set in, hand in the defective one.
	d) Defective ammunition, e.g. wet cartridges or faulty bullets.	d) Change magazine, use other cartridges.